

TECHNICAL & SERVICE MANUAL

Gas Heat Pump Air Conditioner

TROUBLESHOOTING

July 2012

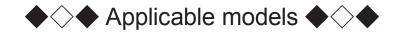


Applicable Models: 2WAY Multi

: 2WAY W Multi

: 3WAY Multi

Reference No. SM7110040-00



< 2WAY MULTI / W MULTI >

U-16GE2E5

U-16GEP2E5

U-20GE2E5

U-20GEP2E5

U-25GE2E5

U-25GEP2E5

U-30GE2E5

< 3WAY MULTI >

U-16GF2E5

U-20GF2E5

U-25GF2E5



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1. Symptoms that are not malfunctions

The following symptoms are characteristic operating conditions of this system and do not indicate malfunctions:

① The fan flaps on the indoor unit operate when the unit is stopped

If the compressor outlet pressure exceeds 3.5 MPa during heating operation, the flaps on the stopped unit move to horizontal and the fan rotates in the breeze.

When this happens, it may indicate a clogged air filter.

Inspect and clean if necessary.

2 Refrigerant noise is occasionally heard from the stopped indoor unit

During cooling operation of the outdoor unit, if the indoor unit is stopped for a period of time that equals the total oil recovery time period while cooling (four hours), refrigerant will circulate in the stopped unit for four minutes, so that refrigerant and oil can be recovered.

During heating operation of the outdoor unit, refrigerant will also flow in the stopped indoor unit, allowing recovery of refrigerant and oil.

3 The fan in the outdoor unit rotates slowly

The outdoor unit fan can be completely stopped or rotated at various speeds by the control system, and will be fast or slow as required. The fan is especially likely to stop or run slowly during cooling or heating operation when outside temperatures are low.

During winter, the outdoor unit fan may rotate even when the engine is stopped.

The unit will not switch from cooling (dry) to heating, or from heating to cooling (dry)

• If "Being controlled by operation mode" is displayed (When already being operated by another remote controller, the selectable operation modes are limited.)

⑤ When the following are displayed on the remote controller:

• If "Being controlled by operation mode" is displayed

(When already being operated by another remote controller, the selectable operation modes are limited.)

• If "Operation standby" is displayed

(In priority operation standby)

• If "Central control in progress" is displayed

(Operation is limited by the central control unit.)

• A display appears but then vanishes

("Valve open" or "water circulation" has been set with the outdoor main board menu item No. 4, test operation forced setting.)

6 When the engine is started, an alarm displays on the 7 segment LED display.

Engine start standby is displayed during menu item No. 0, normal display.

If the unit is in start standby and each start condition is not accomplished when the engine is started, the uncompleted start condition is displayed on the 7 segment LED. There are 5 types of start conditions, some that start automatically after a set time, and some that become abnormal.

* See IV -1 4.-(3) for a list of startup conditions.

The outdoor unit does not operate at all

• The temperature controller is operating (thermo-off).

® Cooling is poor/heating is poor

• Is the temperature controller (remote controller temperature) properly set?

Is there too much load on the air conditioner?

• During demand control, because the unit operates at below the set fuel gas flow control value, cooling may be slightly bad (heating may be slightly bad).

"Inspect oil" flashes on the remote controller.

When the operating hours for the gas engine reach a designated time, "Inspect oil" flashes. Change the engine oil.

If the engine oil is not changed within 200 operating hours after flashing, warning A02 will be displayed and operation will stop.

2. Before troubleshooting (W MULTI series)

(1) W MULTI series system overview

W MULTI series is a system that can join up to two outdoor units to the same refrigerant tube, and control each outdoor unit while performing air conditioning according to the operation load of the indoor unit. Figure 1 gives an overview of the system.

In the example, the W MULTI series (refrigerant system 1) connecting to two outdoor units and 3WAY MULTI (refrigerant system 2) are linkwired by using an operation cable for the indoor - outdoor units. (This is an example of a dual system consisting of two refrigerant systems.)

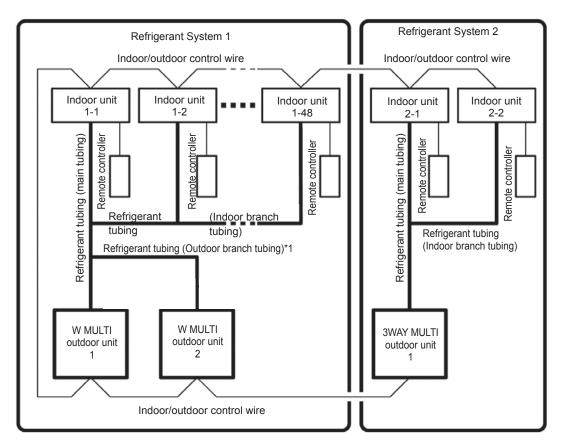


Fig. 1 GHP System Configuration Example

*1 Refrigerant tube

Figure 1 is a simplified diagram. Actually, two refrigerant tubes consisting of a gas tube (thick tube) and a liquid tube (thin tube) are used. Each W Multi outdoor unit is connected to an outdoor branch tube, and then connected to the main tube. For the indoor unit, the refrigerant tubes branched from the main tube are connected to the gas tube and liquid tube of each indoor unit.

(2) About backup operation during maintenance work

• What is backup operation?

In the W MULTI series, multiple outdoor units are connected to the same refrigerant tube as shown in Figure 1. Therefore, even during maintenance work of an outdoor unit, the other outdoor unit not required in maintenance work can be used to keep the indoor operating conditions. This is called a backup operation.

• Backup operation procedure

To perform backup operation, the outdoor unit for maintenance work (hereafter referred to as "target outdoor unit") must be cut off from the system using the following procedure. Review content of the maintenance work and then select the most suitable method.

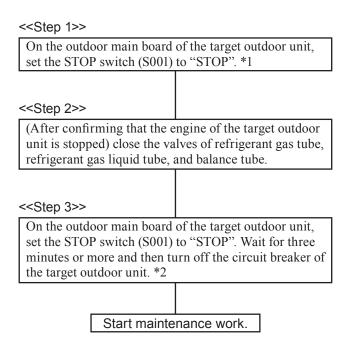
Also, after the maintenance work is finished, always refer to [System recovery procedure] and then return the system to its normal state.

[Backup operation procedure]

To turn off power of target outdoor unit and then perform maintenance work (basic operation during inspection of outdoor unit)

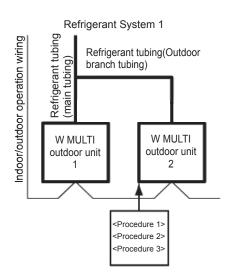
<<Important>>

This is the basic operation performed during inspection work. If this operation is not performed and the power of the outdoor unit is turned off, this will cause system fault and prevent backup operation to be carried out, and serious malfunction will occur. If this happens, see [System recovery procedure] to recover the system, and then once again use the following procedure to perform setup. Automatic backup operation will kick in.



- *1) Sometimes all outdoor units may stop. If there is operation input, outdoor units other than the target one will start operation again after approximately five minutes. (For details on the settings, see the next item.)
- *2) Always carry out the following three tasks.
 - ① Check to make sure <<Step 2>> is finished. If the shutoff valve is opened, refrigerant will flow from the other outdoor unit to the target outdoor unit, causing serious malfunction.
 - ② After three minutes has elapsed from completion of <<Step 1>>, check to make sure the outdoor main board displays " FF" and then perform this operation. If you turn off the power immediately after performing "STOP" setting, the entire system will stop. (Backup operation cannot be performed.) If this happens, see [System recovery procedure], recover the system, and then start over again starting from <<Step 1>>.
 - ③ There will not be any problem whether the circuit breaker of the outdoor unit in <<Step 3>> is ON or OFF. Select one of them according to the work required.

[Work example] Perform maintenance on W MULTI outdoor unit 2 in refrigerant system 1 in Figure 1.



- a) For the W MULTI outdoor unit 2 indicated in the left diagram, perform <<Step 1>> to <<Step 3>> in [Backup operation procedure] in that order. Then, perform maintenance work on W MULTI outdoor unit 2.
- b) When << Step 3>> is finished, W MULTI outdoor unit 1 is reset. It'll stop even if it is operating.)
- c) After approximately five minutes, if there is operation input (indoor remote controller is "Run" or test run setting on outdoor main board), W Multi outdoor unit 1 starts up. (Backup operation starts.)
- d) If test run is set from outdoor main board, W MULTI outdoor unit 1 continues to run. However, if normal operation is started by the indoor remote controller, depending on the load, all outdoor units may stop due to thermostat off.

[System recovery procedure]

If backup operation has been performed, by all means check the following items after the maintenance work, and then perform settings again to return the system to its normal state.

- ① Check to make sure all shutoff valves of refrigerant gas tube, refrigerant liquid tube, and balance tube of the outdoor unit are opened.
- ② Check to make sure the STOP switch (S001) on the outdoor main board is set to "NORM".
- ③ If the power of the outdoor unit has been turned off, turn on the circuit breaker.
- 4 If "Test run" (No.4 Test-Cool/Heat) is set, cancel it.
- * When adjusting to No.4 Test-Cool or Heat, if TEST/WARNING LED (D052) lights, this means "Test run" is being set. In this state, press the SET (S007) key for one second or more. The setting will be canceled (TEST/WARNING LED (D052) goes off.)

3. Malfunctions and Displays

(1) Malfunctions without any display

① The circuit breaker trips when power is turned on

• Short circuit or ground fault of the crankcase heater, current leakage in electrical parts

2 Circuit breaker trips when operated

• Current leakage or short circuit in fan or coolant pump, current leakage or short circuit in electrical parts

3 Poor cooling

- 1) Problem in refrigeration circuit
 - Clog in refrigeration circuit, faulty 4-way valve, faulty electric valve in indoor/outdoor unit, compression failure, or shortage of refrigerant.
 - Shutoff valve not completely open
- 2) Small fan capacity
 - Clogged air filter, foreign matter in air inlet, outlet
- 3) Other
 - Insufficient refrigerant tubing insulation

4 Poor heating

- 1) Problem in refrigeration circuit
 - Clog in refrigeration circuit, faulty 4-way valve, faulty electric valve in indoor/outdoor unit, compression failure, or shortage of refrigerant.
 - Shutoff valve not completely open
- Other
 - Insufficient refrigerant tubing insulation

(5) Heating on standby does not clear

 Warm air is striking the room temperature sensor, temperature around room temperature sensor is high, faulty indoor control board

6 Auto-flap does not move well

- 1) The flaps swing, but wind direction cannot be set
 - Auto-flap limit switch is faulty or has a bad connection
- 2) Does not move (swing, air direction setting)
 - Auto-flap is faulty, indoor control board is failed, remote controller is faulty

7 Loud operation noise or vibration noise

- 1) Noise or vibration when fan operates
 - Fan is unbalanced, worn motor axis bearing, loose fan securing screw
- 2) Loud operation noise or vibration noise when compressor operates
 - Something is coming into contact with the refrigerant tubing or compressor

® Water leakage

- 1) Drain water leakage
 - Clogged drain tube, mistake in draintube construction, insufficient draintube insulation
- 2) Condensation on refrigerant tubing
 - Insufficient tubing insulation
- 3) Condensation at duct outlet
 - Insufficient wind capacity, gap between duct connections

Does not stop

• Fused magnetic contactors, faulty indoor/outdoor control board, faulty remote controller

® No display on the remote controller

- Remote controller wiring disconnected
- Remote controller wiring shorted

(2) Remote Controller alarm display

No indoor unit in automatic address setting

Communication failure between units

Communication failure between outdoor units (for only W MULTI)

Inconsistencies in number of outdoor units (for only W MULTI)

Incorrect outdoor unit tube connection (for only W MULTI)

-Ö- : Flashing O:Lit : Off Warning Wireless Remote Control Device **Detection Item** Display Lamp Display Checked Engine oil pressure error A01 A02 Engine oil error Engine high-revolution error A03 Engine low-revolution error A04 Ignition power source error A05 Engine start failure A06 Fuel gas valve error A07 Engine system error Engine stall 80A High exhaust gas temperature A10 Engine oil level error A11 Engine protective Engine oil presure switch error A14 Operating Wait... Crankshaft angle sensor error A23 Camshaft angle sensor error A24 Outdoor unit A26 Flameout error Starter power source output short circuit A15 device operation Starter system error Starter lock A16 CT error (starter current detection failure) A17 A19 Low coolant temperature High coolant temperature A20 Coolant system error Coolant level error A21 Coolant pump error A22 A25 Clutch error Catalyst temperature error (for only models with catalyst option) A27 A28 Generator error (for only High Power Multi) Converter error (for only High Power Multi) A29 Remote controller Remote controller receive failure E01 detected an abnormal Remote signal from an indoor Remote controller transmission failure controller E02 E03 Indoor unit receive failure from remote controller (central) Indoor unit Duplicate indoor unit address setting E08 Invalid setting Remote E09 Multiple main remote controller units set controller Flashing Indoor unit Indoor unit receive failure from signal output board E11 Automatic address setting is in progress, automatic address Communication E12 Outdoor unit setting start is prohibited Indoor unit transmission failure to remote controller E13 Indoor unit Group control wiring communication failure E18 Indoor unit receive failure from outdoor unit E04 Indoor unit Indoor unit transmission failure to outdoor unit E05 errors Outdoor unit receive failure from indoor unit E06 Outdoor unit transmission failure to indoor unit E07 Operating Timer Wait... Too few units E15 Automatic address alarm E16 Too many units

When the water heat exchanger unit is connected in the table above, please replace indoor unit with water heat exchanger unit for the alarm.

E20

E24

E26

E28

E31

Note: Some items are not indicated, depending model.

Outdoor unit







| | | Detection Item | Warning Display | Wireless Remote Control Lamp Display | Device Checked |
|--------------------|--|--|-----------------|---|-------------------|
| | | Indoor heat exchanger inlet temperature sensor error (E1) | F01 | Operating Timer Wait | |
| | Indoor unit sensor | Indoor heat exchanger outlet temperature sensor error (E3) | F03 | -\\\-\-\\-\-\-\-\-\-\-\-\-\-\-\-\-\-\- | Indoor unit |
| | errors | Indoor unit intake temperature sensor error | F10 | Alternate flashing | |
| | | Indoor unit discharge temperature sensor error | F11 | | |
| | | Compressor outlet temperature sensor error | F04 | | |
| Sensor errors | | Outdoor heat exchanger inlet temperature sensor error | F06 | Operating Timer Wait | |
| r er | | Outside air temperature sensor error | F08 | | |
| rors | | Compressor inlet temperature sensor error | F12 | | |
| | Outdoor unit sensor | Coolant temperature sensor error | F13 | Alternate flashing | Outdoor unit |
| | errors | Compressor inlet/outlet pressure sensor error | F16 | | |
| | | Hot water outlet temperature sensor error (for only models that discharge hot water) | F17 | | |
| | | Exhaust gas temperature sensor error | F18 | | |
| | | Clutch coil temperature sensor error | F20 | Operating Timer Wait | 1 |
| | | Temperature sensor error for oil level measurement (for only W MULTI) | H08 | • -\$- • | |
| Cor | npressor oil depletion e | error (for only W MULTI) | H07 | Flashing | |
| Indo | oor nonvolatile memory | (EEPROM) error (*1) | F29 | Operating Timer Wait | Indoor unit |
| Rea | al time clock (RTC) fund | ction | F30 | Operating Timer Wait | |
| Out | door nonvolatile memo | ory (EEPROM) error | F31 | | Outdoor unit |
| | Inconsistencies in ind equipment connected | oor/outdoor unit models (non-GHP | L02 | | Indoor unit |
| | Multiple main units se | t for group control | L03 | Operating Timer Wait | |
| Invalid | Duplicate indoor unit | (priority indoor unit) | L05 | -\\ \\- | Outdoor unit |
| alid | priority setting | (excluding priority indoor unit) | L06 | | Outdoor unit |
| or r | Group control wire pre | esent for individual-control indoor unit | L07 | Simult. flashing | |
| niss | Indoor unit address no | ot set | L08 | | Indoor unit |
| sing | Indoor unit capacity n | ot set | L09 | | |
| set | Duplicate system (out | door unit) address setting | L04 | Operating Timer Wait | |
| or missing setting | Outdoor unit capacity | not set | L10 | * ~ * | |
| 3 | Indoor unit model sett | | L13 | -Q- | Outdoor unit |
| | Indoor unit pairing fail | | L15 | Simult. flashing | |
| | Gas type setting failur | re | L21 | | |

When the water heat exchanger unit is connected in the table above, please replace indoor unit with water heat exchanger unit for the alarm.

Note: Some items are not indicated, depending in model.







| | | Detection Item | Warning Display | Wireless Lan | Remote | | Device Checked |
|--|--|---|--------------------|----------------------|-----------|-------------------|-------------------|
| Indo | oor unit ceiling panel o | onnector connection failure | P09 | Operating | Timer | Wait | |
| | La da a caractera Cara | Indoor fan error / indoor fan rpm error | P01 | | -\\ | | Indoor unit |
| | Indoor protection devices | Indoor unit float switch operation | P10 | | <u> </u> | 1 | indoor unit |
| | devices | Indoor DC fan error | P12 | | Alternate | e flashing | |
| | | High compressor discharge temperature | P03 | | | | |
| Prote | | Refrigerant high-pressure switch operation | P04 | | | | |
| ctiv | | Power source error | P05 | | | | |
| Protective device operation | | Refrigerant circuit error (for only W MULTI and 3WAY MULTI) | P13 | | | | |
| Ce o | Outdoor protection devices | O ₂ sensor operation | P14 | Operating Timer Wait | Timer | \Mait | |
| ope | | Complete refrigerant gas depletion | P15 | | - | \1. | Outdoor unit |
| rati | | Bypass valve error | P18 | | -Q- | | |
| on | | 4-way valve lock error (not detected 3WAY MULTI) | P19 | Alternate flashing | | ing | |
| | | Refrigerant high-pressure error | P20 | | | | |
| | | Outdoor fan error | P22 | - | | | |
| | | Clutch connection error | P26 | | | | |
| Group control's sub unit error (system controller) | | P30 | | | | System controller | |
| Group control error (alarm) | | | P31 | | | | Indoor unit |
| Oil change time (level) alarm Outdoor display: oiL | | Oil check | | | | | |
| Automatic backup operation (*2) | | | check | | | | Outdoor unit |
| | kup operating display verter is abnomal | without power generation when the | GE | | | | |

When the water heat exchanger unit is connected in the table above, please replace indoor unit with water heat exchanger unit for the alarm.

Note: Some items are not indicated, depending in model.

^{*1:} If the indoor nonvolatile memory (EEPROM) is faulty when the power supply is turned on, Alarm code F29 is not indicated, but the power source LED on the indoor board starts to flicker.

^{*2:}In this case, operation of the system is possible, but one of the outdoor units is detected to have stopped abnormally.

[•] Alarm P30 (group controlled device fault) is sometimes displayed at the system controller.

4. Error Display and Troubleshooting

The description of each error display begins on a new page. Descriptions of some troubleshooting procedures span several pages. When you refer to an error display, be sure to first check whether the description of the troubleshooting procedure spans several pages.

(1) Precautions before Troubleshooting

In order to ensure correct diagnosis and prevent accidents (electric shock, equipment malfunction, measuring instrument damage, etc.), be sure to observe the following precautions.

- ① Be sure to use a digital tester for voltage measurement

 Avoid using a tester with an indicator needle to prevent large measurement errors or operation failure.
- ② Unless otherwise specified, perform voltage measurement with the terminal (terminal plate and connector) connected
 - In some cases, measurement is also performed with the terminal disconnected.
- ③ Perform continuity measurement (resistance measurement) after disconnecting the terminals on both ends Performing continuity measurement while the terminals are connected will cause a short circuit or damage to the tester.
- If instructed to disconnect wires before performing continuity or voltage measurement, be sure to do so, then
 reconnect the wires before proceeding to the next step (item)
- ⑤ Be sure to turn off the power before connecting or disconnecting wires
- © Be careful not to touch any live parts (energized components) with a hand or tool while performing voltage measurement
- ② For DC voltage measurement, the polarity is indicated by + or after the terminal name (symbol) to prevent confusion
 - Connect the red lead of the tester to the + side and the black lead to side.

(2) About the Error Detection Procedure

Some abnormal occurrences are determined as abnormalities the first time they are detected and some are not determined to be abnormalities until they are detected multiple times.

In the latter case, the engine is not forced to shut down the first time an abnormal occurrence happens. Instead, data on the abnormal occurrence is stored in nonvolatile memory, the engine is force stopped for a period of 3 minutes, and then the engine enters the restart sequence.

In the error detection procedures described on the subsequent pages, abnormal occurrences that are determined as abnormalities after being detected multiple times (e.g. 5 times) are taken to mean abnormal occurrences that are continually detected multiple times (e.g. 5 times) within 1 hour of engine operation. Regardless of continual occurrence and engine operation time, the cumulative number of occurrences (e.g. 5 times) may force the engine to shut down.

(3) Engine Start Standby

- When the engine is in standby mode waiting for the startup conditions to be met, the conditions that have not yet been met are displayed on the 7-segment LED display.
- There are 6 startup conditions. Some conditions start the engine automatically after a specified time period, while others cause it to stop with a warning.
- Display Method
 - The startup conditions (see table below) light at engine start up (No. 0 normal display only)
- Startup Conditions Displayed in Engine Start Standby Mode

| Start condition | Start Standby Display Code | Condition |
|---|-------------------------------|---|
| Pressure equalization (Refrigerant high and low pressure) | P 2 0 | Pressure equalizing display (max. 2 min.) |
| Compressor outlet temperature | P 0 3 | Waiting for the temperature to drop to below 115°C. (Malfunctioning if the temperature does not drop within 10 minutes.) |
| Out-of-gas check in progress | P 15 | Waiting for the compressor inlet pressure to exceed 0.1 MPa. (Malfunctioning if the pressure is not restored within 10 minutes.) |
| High coolant temperature | 850 | Waiting for the temperature to drop to below 80°C. (Malfunctioning if the temperature does not drop within 10 minutes.) |
| Air mix check | A C. 1 6 0 | Checking that air in the coolant circuit is being mixed (requires a maximum of approximately 2 minutes.) |
| Coolant circuit check in progress | 8 2 2 | Waiting for the coolant pump to exceed 2500rpm ⁻¹ . (Malfunctioning if the pressure is not restored within 3 minutes.) |
| No condenser (3WAY model only) | na Coud | Waiting for the 3WAY solenoid valve in the indoor and outdoor units to complete switching so the system can secure the condenser. |
| No evaporator (3WAY model only) | na EuR | Waiting for the 3WAY solenoid valve in the indoor and outdoor units to complete switching so the system can secure the condenser. |

(4) Troubleshooting

A01 Engine Oil Pressure Error

① Error detection method

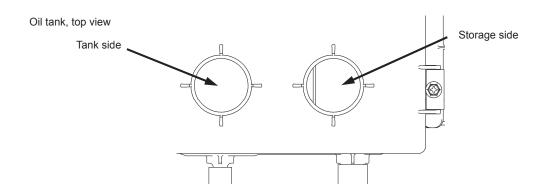
- When the engine oil pressure switch is OFF continuously for 4 seconds during engine operations (complete combustion,) the engine will be shut down momentarily and an error flag set. The reason for the engine being shut down is due to the error flag being triggered five consecutive times in one hour.
- * When the engine oil pressure switch is not detected within ten seconds of the engine being started (complete combustion.)
- When oil pressure (engine earth common) K21 or K25 (short circuit) are detected at the engine oil pressure switch contact with oil pressure detected.

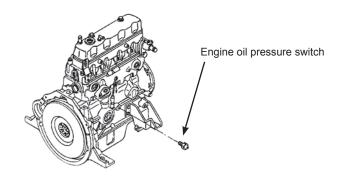
② Troubleshooting

| 1 | 4.4 | le there all in the aterese aids of the ail toul? | Yes | 2-1 |
|-----------------|-------------------------------|---|-----|-----------------------------------|
| Oil level | | Is there oil in the storage side of the oil tank? | | 1-2 |
| | 1.2 | Any oil leaks or dirty oil? | Yes | Repair |
| | 1-2 Any on leaks or dirty on? | | No | 1-3 |
| | 1 2 | Is the tank side of the oil tank empty? | Yes | Add oil |
| | 1-3 | is the tank side of the oil tank empty? | No | 1-4 |
| | 1-4 | Does the oil fill pump operate properly? | Yes | Check for pinched or clogged hose |
| | | | No | 1-5 |
| | 1 5 | Any oil fill pump wiring broken or disconnected? | Yes | Repair wiring |
| | 1-3 | Any on all pump wining broken or disconnected: | No | Replace pump |
| 2 | 2-1 | between the oil pressure switch terminal (+) and body ground (–) | Yes | 3-1 |
| Oil pressure | | | No | 2-2 |
| switch | 2-2 | more? | Yes | Oil pressure switch defective |
| | | | No | 2-3 |
| | 2-3 | Is the oil filter clogged? | Yes | Replace oil filter |
| | 2-3 | | No | Engine is defective |
| 3 Wiring | | connection, contact or crimping? • Wiring from outdoor main board connector 2P (red) CN012 No. 1 to oil pressure • Wiring from outdoor main board connector 2P (red) CN021 No. 1 to power board connector | Yes | Repair wiring |
| | 3-1 | | No | Replace outdoor main board |

- For work procedure for replacing outdoor main board, see "5. Reference Document".
- For board and Electrical Wiring Diagram, see Chapter 6.
 - Outdoor main board: page VI-2
 - Outdoor power board: page VI-3
 - · Converter board: VI-4
 - Indoor control board for DC motor models: page VI-5
 - Outdoor Unit Electrical Wiring Diagram: page VI-6

• 1-1





• 3-1 With oil pressure: DC0V No oil pressure: DC12V

A02 Engine Oil Error

This function is used to advise the user that the time for changing the engine oil has arrived (or is close.) It is not a function for detecting and displaying equipment malfunctions (or suspected malfunctions) in the same way as normal error detection.

① Oil Change Notification Conditions and Display Method

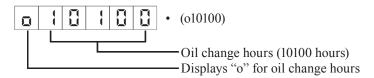
The fact that the time for changing the engine oil has arrived (or is close) is displayed on the remote controller and on the main circuit board on the outdoor unit.

| Notification | Notification Conditions | Display method | | Remarks |
|----------------|---|---------------------|--|---|
| | (Time to Change Oil *1) | Remote controller | Outdoor Unit Circuit Board | |
| Oil Inspection | 9,800 or more hours | "Oil Change" blinks | 0.00.0 ct. | Operations continued |
| A02 Alarm | (a) 10,000 to 10,300 hours • Alarm triggered every 50 hours (b) 10,300+ hours • Alarm triggered every 4 hours | "A02" blinks | 0.00 R 0 2 0.00 b L (Displayed alternately) | Operations restarted when error is reset. * Error reset with the remote controller and outdoor unit circuit board. * Only III III L is displayed after reset. |

^{*1)} Oil change time: Engine operation times since the previous oil-change and time reset

(See ② below for details on how to reset the oil change time.)

- ② Method for resetting oil change hours timer
 - 1) Select Menu No. 2 "Oil change hours display". The oil change hours are displayed as shown below.



2) By holding down the set key while displaying the oil change hours, the display changes to the following. Also, if an operation error results in this display, simply wait for about one second to return to the previous oil change hours display.

- 3) When the CLr display appears, release the set key momentarily, then quickly press and hold down the set key again.
 - When the following display appears, the oil change hours are reset to 0 hours.

When this display does not appear, and the previous oil change hours are displayed, repeat the process as described above.



A03 Engine High-Revolution Error

① Error detection method Engine revolution speed is,

 $45.0 \sim 71.0$ kw models

- Engine revolution speed is more than 2,300min⁻¹ continuously for 30 seconds
- Engine revolution speed is more than 2,400min⁻¹ continuously for 10 seconds
- Engine revolution speed is more than 2,500min⁻¹ continuously for 1 second

85.0 kw models

- Engine revolution speed is more than 2,700min⁻¹ continuously for 30 seconds
- Engine revolution speed is more than 2,800min⁻¹ continuously for 10 seconds
- Engine revolution speed is more than 2,900min⁻¹ continuously for 1 second

If any of above conditions occur, the engine stops momentarily and an error flag is set. An Engine Speed Too High trouble is assumed when the error flag has stopped the engine 5 consecutive times in 1 hour."

| 1 Check | | Measure actual revolution speed using a revolution meter. Was there | Yes | 2-1 |
|------------------------|---|---|-----|-------------------------------------|
| revolution speed | h ligh revolution when the error occurred? | | No | 4-1 |
| 2 | 2-1 Is the throttle valve locked or sticking? | | Yes | Repair |
| Mixer | | | No | 3-1 |
| 3 | 3-1 | Door the compressor have any reason for abnormally law load? | | 5-1 |
| Compressor | 3-1 | Does the compressor have any reason for abnormally low load? | NG | Restore |
| 4 Ignition pulse | 4-1 | Ignition coil, cam angle sensor, and crank angle sensor | | |
| 5 Wiring | ,, p | | Yes | Reset the power after repair wiring |
| | | • In the relay part, is the wiring for the throttle (step motor) and fuel regulating valve crossed? | No | 6-1 |
| 6 | | Does the throttle (step motor) coil resistance measure about 120Ω? | Yes | 6-2 |
| Mixer | 6-1 | (Disconnect relay connector 6P-1, and measure between No. 1 (red) and No. 2/No. 3, and between No. 4 (orange) and No. 5/No. 6.) | No | Replace mixer |
| | | 2 CN066 No. 1 (+) and No. 2 (-)/No. 3 (-) as well as between No. | Yes | Replace mixer |
| | 6-2 | | No | Replace outdoor main board |

- For work procedure for replacing outdoor main board, see "5. Reference Document".
- For board and Electrical Wiring Diagram, see Chapter 6.
 - Outdoor main board: page VI-2
 - Outdoor power board: page VI-3
 - Converter board: VI-4
 - Indoor control board for DC motor models: page VI-5
 - Outdoor Unit Electrical Wiring Diagram: page VI-6

A04 Engine Low-Revolution Error

① Error detection method

• When engine revolution speed drops to 700min⁻¹ or less continuously for 3 seconds during engine operation (complete combustion), an abnormal flag is set and the engine stops. An Engine Speed Too Low condition is assumed when the error flag has stopped the engine 5 consecutive times in 1 hour.

| | _ | | | |
|------------------------|-----|--|-------|---------------------------------------|
| 1 | 1 1 | Has the fuel gas pressure dropped? Is the fuel empty? | OK | 2-1 |
| Fuel | 1-1 | Thas the fuel gas pressure dropped : is the fuel empty : | NG | Restore |
| 2 Check | 2-1 | Measure actual revolution speed using a revolution meter. Are the | Yes | 3-1 |
| revolution speed | | revolutions low? | No | 4-1 |
| 3 | 3-1 | Is the throttle valve operating? | Yes | 6-1 |
| Mixer | 3-1 | is the throttle valve operating: | No | 5-1 |
| 4 Ignition pulse | 4-1 | coil one by one during operations. It is normal if changes in | ОК | 5-1 |
| | | | NG | Restore |
| 5 | l | Any poor connections, poor contacts or severed wires between the | Yes | Repair Wiring |
| Wiring | 5-1 | throttle (step motor) wiring and connector? (Wiring from outdoor main board connector 6P (black) CN066 to throttle (step motor)) | No | 8-1 |
| 6 | | | ОК | 6-3 |
| Engine | 6-1 | Measure compression (See A06 5-1). | NG | 6-2 |
| | 6-2 | | ОК | 6-3 |
| | | 6-2 Check 6-1 again after washing the valve and adjusting the valve clearance. Any problem with compression? | NG | Replace engine head |
| | 6-3 | Are spark emissions normal? | Yes | 6-6 |
| | 0-3 | | No | 6-4 |
| | 6-4 | Inspect ignition plug (see A06 2-3) ⊢ | OK | 6-5 |
| | 0 1 | inopositignition plug (see 7.66 2.6) | NG | Replace |
| | 6-5 | Replace the ignition coil, cam angle sensor and crank angle sensor or defective part. | ne by | one to identify the |
| | 6-6 | Inspect the zero governor (see A06.3-1) | OK | 6-7 |
| | | | NG | Restore |
| | 6-7 | In the ignition timing normal? (see AOS F. 4) | OK | 7-1 |
| | 0-7 | Is the ignition timing normal? (see A06 5-4) | NG | Adjust |
| 7 Fuel gas | 7-1 | Does the fuel regulating valve (step motor) coil resistance measure about 120Ω? (Disconnect relay connector 6P-6 and measure | ОК | 7-2 |
| regulating valve | , , | between No. 1 (red) and No. 2/No. 3, and between No. 4 (orange) and No. 5/No.6.) | NG | Replace mixer |
| | 7-2 | Is 4V DC being applied between the outdoor main board connector 7-2 6P (red) CN065 No. 5 and No. 1/No. 2 as well as between No. 3/No. | Yes | Replace mixer |
| | | 4 when the power is on (during positioning)? | No | 8-1 |
| 8 Mixer | 8-1 | Does the throttle (step motor) coil resistance measure about 120Ω? (Disconnect relay connector 6P-2, and measure between No. 1 (red) and No. 2/No. 3, and between No. 4 (orange) and No. 5/No. 6.) | Yes | 8-2 |
| | | | No | Replace mixer |
| | | Is 4V DC being applied between the outdoor main board connector | Yes | Replace mixer |
| | 8-2 | 6P (black) CN066 No. 1 (+) and No. 2 (-)/No. 3 (-) as well as between No. 4 (+) and No. 5 (-)/No. 6 (-) when the power is on (during positioning)? | No | Replace the outdoor unit's main board |
| | 1 | ı | | |

- For work procedure for replacing outdoor main board, see "5. Reference Document".
- For board and Electrical Wiring Diagram, see Chapter 6.
 - Outdoor main board: page VI-2
 - Outdoor power board: page VI-3
 - Converter board: VI-4
 - Indoor control board for DC motor models: page VI-5
 - Outdoor Unit Electrical Wiring Diagram: page VI-6

A05 Ignition Source Error

① Error detection method

When the starter power output meets the following conditions, an error is detected upon 5 consecutive occurrences in one hour.

- When an ignition voltage decrease is detected for 2.5 seconds or more.
- During cranking, when I<3.8A is detected for 4 seconds, with no revolution pulse.

Note) The starter power source magnet switch (52S) operation is as follows.

- When power is turned on, 52S turns ON upon operation signal input. If no abnormalities occur thereafter (A15, A16, A17), this stays ON, and turns OFF upon stop signal input.
- Turns OFF when error occurs.

② Troubleshooting

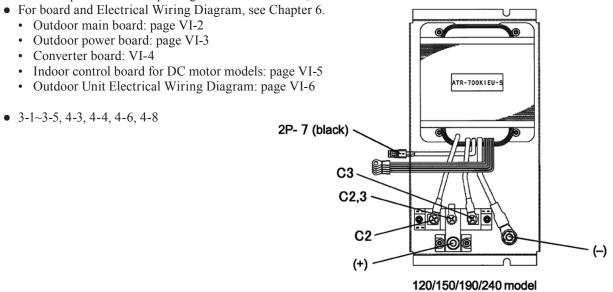
Try operating the outdoor unit.

- When the starter power source magnet switch (52S) does not turn ON: Go to 1-1
- When the starter power source magnet switch (52S) turns ON, and then turns OFF after 3 seconds: Go to 2-1
- When the starter power source magnet switch (52S) turns ON but the starter does not turn ON: Go to 4-1

| 1 Starter | 1-1 | Is AC200C applied between magnet switches A1 and A2 when the magnet switch is turned on? | Yes | Replace magnet switch |
|---------------------|-------------------------|--|-------|--|
| power source | | magnet switch is turned on: | No | 1-2 |
| magnet | 1-2 | Is AC200C applied between power board connectors 3P (yellow)/ | Yes | 1-3 |
| switch (52S) | 1-2 | CN028 No. 1 and No.3 when the magnet switch is turned on? | No | 1-4 |
| | 1-3 | When wiring connection/contact is poor between the outdoor unit's po (red)/CN028 and magnet switches A1-A2 \rightarrow Repair wiring | wer b | oard connector 3P |
| | 1-4 | Is AC200C being applied between the outdoor unit's power board connector 3P (white)/CN002 No. 1 and No. 2? | Yes | Replace the outdoor unit's power board |
| | | | No | 1-5 |
| | | Is AC200C being applied between the filter heard connector 3P | Yes | 1-6 |
| | 1-5 | Is AC200C being applied between the filter board connector 3P (white)/CN003 No. 1 and No. 2? | No | Replace the filter board |
| | 1-6 | When wiring connection/contact is poor between the outdoor unit's po (white)/CN002 and filter board 3P (white) CN003 No.1 and No.3 \rightarrow Re | | |
| 2 Ignition coils | 2-1 | Is DC11V or more applied between the outdoor unit's main board connector 2P (black) CN006 No. 1 (+) and No. 2 (–) when the magnet switch is turned on? | Yes | Replace the outdoor unit's main board |
| | | Switch is turned on: | No | 2-2 |
| | 2-2 | connector 2P (black) CN006 No. 1 (+) and No. 2 (–) when the magnet switch is turn on with the outdoor unit's main board connectors 6P | Yes | 2-3 |
| | | | No | 2-4 |
| | 2-3 | main board connector 6P (white) CN010 and 6P (black) CN011 and | ОК | Replace the ignition coil |
| | | | NG | Repair Wiring |
| | 2-4 | Is AC11V or more applied between the outdoor unit's main board | Yes | 2-5 |
| | | connector 2P (white) CN022 No. 1 (+) and No. 2 (–) when the magnet switch is turned on? | No | 3-1 |
| | 2-5 between the outdoor | Are there any defective wiring connections/contacts or severed wires | Yes | Repair Wiring |
| | | between the outdoor unit's power board connector 2P (black) CN025 and the outdoor unit's main board connector 2P (black) CN006? | No | Replace the outdoor unit's power board |
| 3 Ignition | 3-1 | Is approximately AC11V applied between the starter power source's relay connector 2P-7 (black) No. 1 and No. 2 when the magnet switch | Yes | 3-2 |
| (starter) | 0-1 | is turned on? | No | 3-3 |
| power | 3-2 | Are there any defective wiring connections/contacts or severed wires unit's power board connector 2P (white) CN022 and the starter power connector 2P-7 (black)? → Repair wiring | | |
| | 3-3 | Is AC200V applied between the starter power source's relay connector 2P-6 (white) No. 1 and No. 2 when the magnet switch is | Yes | Replace the starter power |
| | turned on? | No | 3-4 | |

| | | | | 1 - |
|---|-----|--|--------|--|
| | 3-4 | Is approximately AC200V applied between the magnet switch's No. 2 | Yes | 3-5 |
| | | and No. 6 when the magnet switch is turned on? | No | 3-6 |
| | 3-5 | Are there any defective wiring connections/contacts or severed wires switch and the starter power source's relay connector 2P-6 (white?) | | |
| | | La convenience to ly A C200V/ hairs a condited between the reserved quiteb | Yes | 3-7 |
| | 3-6 | Is approximately AC200V being applied between the magnet switch No.1 and No.5? | No | Check primary wiring→ Repair |
| | 3-7 | is approximately result approximation and magnetic anticon in and | Yes | Replace the magnet switch |
| | | A2 when the magnet switch is turned on? | No | 3-8 |
| | 3-8 | Are there any defective wiring connections/contacts or severed wires between the outdoor unit's power board connector 3P (yellow) | Yes | Repair Wiring |
| | | | No | 3-9 |
| | 3-9 | Is approximately AC200V being applied between the outdoor unit's power board connector 3P (white) CN002 No.1 and No.3? | Yes | Replace the outdoor unit's power board |
| | 3-9 | | No | Check the relevant wiring and filter board |
| 4 | 4-1 | is believed in the equities of the entire of | Yes | 4-2 |
| Starter/ | | | No | 4-3 |
| starter relay (outdoor unit main board) | | engine ground (-) when cranking is started? | Yes | Replace the starter |
| | | | No | 4-5 |
| | 4-3 | is both of more applied between the starter power source (*) and (*) | Yes | 4-4 |
| | | | No | 3-3 |
| | 4-4 | Are there any defective wiring connections/contacts between the start terminal and the starter's B terminal, or between the starter power sou engine ground? → Repair wiring | | |
| | 4-5 | Is DC10V or more applied between the outdoor unit's power board connector CN084 (+) and the outdoor unit's main board connector | Yes | 4-6 |
| | 4-0 | FG CN075 (-) when cranking is started? | No | 4-7 |
| | 4-6 | Are there any defective wiring connections/contacts between the outd connector CN084 (+) and the starter's S terminal? → Repair wiring | oor ui | nit's power board |
| | 4-7 | Is DC10V or more applied between the outdoor unit's power board connector CN084 (+) and the outdoor unit's main board connector FG CN075 (-) when the magnet switch is on? | Yes | Replace the outdoor unit's main board |
| | | | No | 4-8 |
| | 4-8 | Are there any defective wiring connections/contacts between the outd connector CN084 (+) and the starter power source's + terminal? \rightarrow Re | | |

• For work procedure for replacing outdoor main board, see "5. Reference Document".



A06 Engine Start Failure

① Error detection method

When the engine will not start despite cranking being carried out 30 times (revolution speed detected) during engine start-up (cranking = 5 seconds ON, 10 seconds OFF.)

* Enforced pauses of 3 minutes every 5 cranks and 10 minutes every 15 cranks are in effect.

| 1 | 1-1 | Has the fuel gas pressure dropped? Is the fuel empty? Measure the | OK | 2-1 |
|--|--|---|---------------------|--|
| Engine | 1-1 | pressure at the gas pressure measuring port during cranking. | NG | 1-2 |
| | 1-2 | Is the gas solenoid valve SW (S002 on the outdoor unit's main board) | Yes | 4-1 |
| | 1-2 | set at NORM? | No | Set SW at NORM |
| 2 | 2-1 | Are spark emissions normal? (Remove plug and check outside. Or, | Yes | 3-1 |
| Plug | 2-1 | check with a timing light.) | No | 2-2 |
| | 2-2 | Are there any poor connections, poor contacts, poor crimping or severed wires between the ignition wiring and the outdoor unit's main | Yes | Repair Wiring |
| | | board connector 6P (white) CN010 and 6P (black)/CN011? | No | 2-3 |
| | 2-3 | Inspect ignition plug. | OK | 7-1 |
| | | inspectignition plag. | NG | Replace plug |
| 3 Zero | 3-1 | Inspect zero governor. | ОК | 5-1 |
| governor | • | mopost 2010 governon | NG | Restore |
| 4 Gas | 4-1 | Is DC180V being applied between the fuel gas solenoid valve relay connector 4P-1 (white) No. 1 (+) and No. 2 (–) and between No. 3 (+) | Yes | 4-2 |
| solenoid | | and No. 4 (–) during cranking? | No | 6-1 |
| valve/Gas adjustment | 4-2 | Is DC180V or more being applied between the fuel gas solenoid valve coil terminals during cranking? | Yes | 4-4 |
| valve | | (See 4-4 for gas-type C models.) | No | 4-3 |
| | 4-3 | Are there any poor wiring connections, crimping or severed wires between the fuel gas solenoid valve relay connector 4P-1 (white) and | Yes | Repair Wiring |
| | | the solenoid valve? | No | 4-4 |
| | 4-4 | (Check for coil breakage, foreign matter, fuel gas passage blockages | OK | 4-5 |
| | | | NG | Repair (or replace) |
| | 1 5 | Are the throttle (step motor) and fuel gas regulating valves operating | ОК | 5-1 |
| | normally? | NG | Replace | |
| 5 | E 1 | Magaura compression | OK | 5-3 |
| Engine | 5-1 | Measure compression. | NG | 5-2 |
| | | Charle C. 4 again of tag working the value and adjusting the value | OK | 5-3 |
| | Check 6-1 again after washing the valve and adjusting the valve clearance. Any problem with compression? | NG | Replace engine head | |
| | 5-3 I | 1. II | ОК | 5-4 |
| | | Is the air cleaner soiled? (Visual inspection) | NG | Clean/replace |
| | - A | Handbarian timing the same diseased | Yes | 6-1 |
| | 5-4 | Has the ignition timing been adjusted? | No | Adjust |
| 6 Solenoid | 6-1 | Is 180V DC being applied between the outdoor unit's power board connector 7P (white) CN041 pin 1 (+) and pin 3 (–) and between pin 5 | Yes | 6-2 |
| Solenoid valve wiring/ circuit board | 0-1 | (+) and pin 7 (–) during cranking? | No | 6-3 |
| | 6-2 | Are there any poor connections, contacts, crimping or severed wires between the outdoor unit's power board connector 7P (white) CN041 and the fuel gas solenoid valve relay connector 4P-1 (white)? | Yes | Repair Wiring |
| | 0-2 | | No | 6-3 |
| | 6-3 | Is 200V AC being applied between the outdoor unit's power board connector 3P (white) CN002 No. 1 to No. 3? | Yes | Replace the outdoor unit's power board |
| | | | No | 6-4 |

| | 6-4 | Is 200V AC being applied between the filter heard connector 3D | Yes | 6-5 |
|-------------------------|-----|--|-------|--------------------------|
| | | Is 200V AC being applied between the filter board connector 3P (white) CN003 No. 1 to No. 3? | No | Replace the filter board |
| | | Are there any poor connections, contacts or severed wires between the outdoor unit's power board connector 3P (white) CN002 and the | Yes | Repair Wiring |
| 0- | | | No | 7-1 |
| 7 Crank/cam angle | 7-1 | Are there any poor connections, poor contacts, poor crimping or severed wires in the following wiring? • Between the outdoor unit's main board connector 3P (white) CN015 | Yes | Repair Wiring |
| sensor | 7-1 | and the crank angle sensor connector?Between the outdoor unit's main board connector 3P (black) CN016 and the cam angle sensor connector? | No | 8-1 |
| 8 Ignition coil | 8-1 | Inspect the ignition coil (coil, igniter) and the ignition wiring. If they are outdoor unit's main board. | okay, | then replace the |

- For work procedure for replacing outdoor main board, see "5. Reference Document".
- For board and Electrical Wiring Diagram, see Chapter 6.
 - Outdoor main board: page VI-2
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• 2-3

- 1) Check the plug cap (to ascertain that it is 0.8 mm or less.)
- 2) Check for insulator damage (must be no cracks or signs of electrical current leaks.)
- 3) Must be no carbon or residual oil attached.

• 3-1

- 1) Remove the front cover and diaphragm.
- 2) Remove the valve and valve lever assembly.
- 3) Inspect the diaphragm for damage or tears, and the valve for its operation status.

• 5_1

- 1) After warming the engine, remove all spark plugs.
- 2) Set the compression gauge in the spark plug hole.
- 4) Use the DOWN key or UP key to start automatic cranking (for 5 seconds.)
- 5) Check that the gauge value exceeds the following threshold values. (Repeat and confirm step #4 three times for each cylinder.)

| Engine | Compression Threshold (lower threshold) [Mpa] |
|--------|---|
| K21 | 1.55 |
| K25 | 1.62 |

- 6) Reset the compression gauge in another cylinder and repeat again from step #3.
- 7) The procedure is complete when all cylinders have been checked.

• 5-4

See Chapter 5 "Inspection and Adjustment of Ignition Timing" for details on the procedures.

A07 Fuel Gas Valve Error

① Error detection method

• An error flag is set when it is judged that the fuel gas valves did not close when engine operations were halted (excluding when halted owing to malfunctions) and an error will be triggered when this occurs five consecutive times.

| 1 | | | Yes | 1-2 |
|---|-----|---|-----|---------------------------------------|
| Circuit board / Gas solenoid valve | 1-1 | to completely halt operations of the outdoor unit. Is 180V DC being applied between the outdoor unit's power board connector 7P (white) CN041 No.1 (+) to No.3 (-), and between No.5 (+) to No.7 (-) when the unit is halted? | No | Replace the fuel gas solenoid valve |
| | 1-2 | Is the same problem as explained in 1-1 still occurring after the outdoor unit's power board has been replaced? | Yes | Replace the outdoor unit's main board |
| | | | No | End |

- For work procedure for replacing outdoor main board, see "5. Reference Document".
- For board and Electrical Wiring Diagram, see Chapter 6.
 - Outdoor main board: page VI-2
 - Outdoor power board: page VI-3
 - Converter board: VI-4
 - Indoor control board for DC motor models: page VI-5
 - Outdoor Unit Electrical Wiring Diagram: page VI-6

A08 Engine Stall

① Error detection method

During engine operation (complete combustion), when engine revolution speed $\leq 100 \text{min}^{-1}$ continuously for 3 seconds, the engine is stopped momentarily and an error flag is set.

An Engine Stall condition is assumed when the error flag has stopped the engine 5 consecutive times in 1 hour.

| ② Troublesho | oung | | | |
|---------------------------|--|--|-------|---------------------------------------|
| 1 | 1-1 | Has the fuel gas pressure dropped? Is the fuel empty? | OK | 2-1 |
| Fuel | 1-1 | Thas the faci gas pressure dropped: is the faci empty: | NG | Restore |
| 2 | 2-1 | Manaura compression (See AGE 5.1) | OK | 2-3 |
| Engine | 2-1 | Measure compression (See A06 5-1). | NG | 2-2 |
| | | Check 2-1 again after washing the valve and adjusting the valve | OK | 2-3 |
| | 2-2 | clearance. Any problem with compression? | NG | Replace engine head |
| | | | OK | 2-4 |
| | 2-3 | Is the air cleaner soiled? (Visual inspection) | NG | Clean and Replace |
| | 2 4 | Are energy emissions normal? | Yes | 2-7 |
| | 2-4 | Are spark emissions normal? | No | 2-5 |
| | ٠, | leannet inviting along (and ACC C C) | OK | 2-6 |
| | 2-5 | Inspect ignition plug (see A06 2-3) | NG | Replace |
| | 2-6 | Replace the ignition coil, cam angle sensor and crank angle sensor or defective part. | ne by | one to identify the |
| | 2.7 | Unspect the zero governor (see A06.3-1) | OK | 2-8 |
| | 2-7 | | NG | Restore |
| | 0 | Is the ignition timing okay? (see Chanter 5 (9)) | OK | 2-9 |
| | 2-8 | | NG | Adjust |
| | 2-9 | Its air being sucked in? Check the rubber plug on the intake manifold | OK | 2-10 |
| | | | NG | Replace |
| | 2-10 | Is 4V DC (approximately) being applied between outdoor unit's main | Yes | 2-11 |
| | | board connector 6P (black) CN066 No. 1 (+) and No. 2 (-)/No. 3 (-) and between No. 4 (+) and No. 5 (-)/No. 6 (-) when the power is turned on (during positioning)? | No | Replace the outdoor unit's main board |
| | 2-11 connect between (during | Is DC voltage being applied between outdoor unit's main board | Yes | 2-12 |
| | | connector 6P (red) CN065 No. 1 (+) and No. 2 (-)/No. 3 (-) and between No. 4 (+) and No. 5 (-)/No. 6 (-) when the power is turned on (during positioning)? | No | Replace the outdoor unit's main board |
| | | Inspect the mixer's stepping motor (both the throttle and the fuel gas adjustment valve.) Are any wires severed? | Yes | Replace the stepping motor |
| | | adjustificity valve. / Are arry wiles severed: | No | 2-13 |
| | 2-13 | Are the throttle valve or fuel gas adjustment valves locked in place? Is it possible to easily move each valve by hand with the stepping | Yes | |
| | | motor removed? | No | Replace mixer |
| 3 Engine load check | There is a chance that the engine load could be unsuitable. Check the following, and mare repairs if problems are found. Is the air filter on the indoor unit blocked? (Especially in the heater mode.) Has a short circuit occurred with the air on the indoor unit? (Especially in the heater mode) with the remote controller's thermostat.) Has a short circuit occurred with the air on the outdoor unit, or is the air heat exchange the outdoor unit closed, etc.? (When in the cooler mode.) Is the refrigerant route blocked (strainer, dry core, etc.), is the valve closed (forgotten to closed valves, etc) or is the motor-operated valve locked in place? Has the refrigerant been over-filled? | | | he heater mode eat exchanger on |

- For work procedure for replacing outdoor main board, see "5. Reference Document".
- For board and Electrical Wiring Diagram, see Chapter 6.
 - Outdoor main board: page VI-2
 - Outdoor power board: page VI-3
 - Converter board: VI-4
 - Indoor control board for DC motor models: page VI-5
 - Outdoor Unit Electrical Wiring Diagram: page VI-6

A10 Exhaust Gas Temperature High

① Error detection method

During engine operation (complete combustion), when the exhaust gas temperature $\geq 130^{\circ}$ C continuously for 10 seconds, the engine is stopped momentarily and an error flag is set.

An Exhaust Gas Temp. High error is assumed when this flag has shut down the engine once.

| 1 | | | Yes | 2-1 |
|--------------------------------|-----|--|-----|---|
| Exhaust gas temperature | 1-1 | Measure the actual exhaust gas temperature. Is it high? | No | 4-1 |
| 2 | | In there any sign of the applications (2) | OK | 2-2 |
| Coolant amount check | 2-1 | Is there any sign of the coolant leaking? • Check the base and around the base. • Check the amount in the reserve tank. • Check the coolant route (detached hose, etc.) | NG | Repair the leaks and then refill with coolant and perform an air purge. |
| | | le the coolers with a possible of control le O | ОК | 3-1 |
| 2-2 | 2-2 | | NG | There is a possibility that air has become mixed in, so refill with coolant and perform an air purge. |
| 3 Exhaust | | 3-1 Is there heavy soiling on the inside of the exhaust gas tube on the exhaust gas heat exchanger? | Yes | Replace the exhaust gas heat exchanger |
| gas heat exchanger check | 3-1 | | No | 4-1 |
| 4 Wiring and | 4-1 | | ок | Outdoor unit's power board |
| thermistor check | | | NG | Replace the sensor |

- For board and Electrical Wiring Diagram, see Chapter 6.
 - Outdoor main board: page VI-2
 - Outdoor power board: page VI-3
 - Converter board: VI-4
 - Indoor control board for DC motor models: page VI-5
 - Outdoor Unit Electrical Wiring Diagram: page VI-6

A14 Engine Oil Pressure Switch Error

① Error detection method

• When starting the engine, if the oil pressure switch is ON for 6 seconds or more (contact closed) before complete combustion, an error flag is set. An abnormal stop results on the first occurrence. However, if turned OFF, the error flag is automatically reset and the starting sequence continues.

② Troubleshooting

| 1 Wiring | 1-1 | the oil pressure switch is disconnected? (Note: Avoid allowing the disconnected wire from coming into contact with the frame | Yes | 1-2 | |
|-----------------------------|-----|---|-----|---------------------------------------|--|
| | | | No | 2-1 | |
| | | (Disconnect the wire between the above-mentioned connector | Yes | Repair Wiring | |
| | | | No | Replace the outdoor unit's main board | |
| 2 Oil pressure switch | 2-1 | Disconnect the oil pressure switch from the engine and purge t Having done that, reconnect the oil pressure switch and start o occurs again, replace the oil pressure switch. | | | |

- For work procedure for replacing outdoor main board, see "5. Reference Document".
- For board and Electrical Wiring Diagram, see Chapter 6.
 - Outdoor main board: page VI-2
 - Outdoor power board: page VI-3
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 - Indoor control board for DC motor models: page VI-5
 - Outdoor Unit Electrical Wiring Diagram: page VI-6
- 1-2

With oil pressure: DC0V No oil pressure: DC12V

A15 Starter Power Source Output Short Circuit

① Error detection method

When the starter power primary current meets the following conditions, an error is determined upon 5 consecutive occurrences in 1 hour.

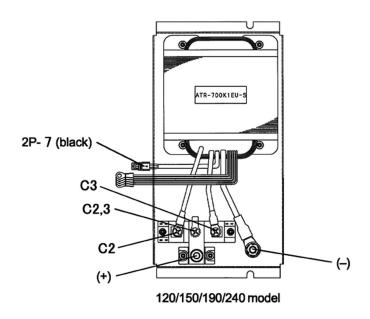
- Not during cranking: When 40A or more is detected for 0.1 second or more
- Not during cranking: When 26A or more is detected for 0.2 second or more
- Not during cranking: When 3.8A or more is detected for 5.0 second or more

Note 1) The starter power source magnet switch (52S) operation is as follows.

- 52S turns ON upon operation signal input. If no abnormalities occur thereafter (A15, A16, A17), this stays ON, and turns OFF upon stop signal input.
- Turns OFF when error occurs.

| 1 | 1-1 | Reoccurs even when disconnecting the two wires from the | Yes | 1-2 |
|---------------------|-----|--|-----|-----------------------------|
| Starter | | starter power sours ⊕ terminals? | No | 2-1 |
| source (DC current) | 1-2 | Reoccurs even after disconnecting control board connector 3P (yellow) CN063 (Ignore abnormality A17 if it occurs.) | Yes | Replace control board |
| | | | No | Replace starter power sours |
| 2 Starter 2 | 2-1 | ⊕ terminal to the starter short-circuit, ground faulted, or | Yes | Repair/replace wiring |
| | | | No | Replace starter |

- For work procedure for replacing outdoor main board, see "5. Reference Document".
 - For board and Electrical Wiring Diagram, see Chapter 6.
 - Outdoor main board: page VI-2
 - Outdoor power board: page VI-3
 - Converter board: VI-4
 - Indoor control board for DC motor models: page VI-5
 - Outdoor Unit Electrical Wiring Diagram: page VI-6 *Reference (Electrical Wiring Diagram C-D-1-2)
 - 1 -1, 2-1



A16 Starter Lock

- ① Error detection method
 - During cranking, a Starter Locked error is assumed when any of the following conditions occur 5 times in 1 hour: the starter power primary current meets the following condition, no revolution pulse is detected, no input from the crank angle sensor, no input from the ?cam? angle sensor.
 - When 32A or more is detected for 1.0 second or more

② Troubleshooting

1) Check starter

| 1 | 1_1 | Check for starter lock (If there is no starter lock (includes engine and compressor) replace the |
|---------|-----|--|
| Starter | 1-1 | outdoor main board) |

- For work procedure for replacing outdoor main board, see "5. Reference Document".
- 2) Temporarily remove the compressor drive belt, and check the following rotating parts for locking. (See Periodic Inspection and Parts Replacement Manual for installing and removing compressor drive belt)

| 2 Compressor | 2-1 | Rotates by hand with some resistance? | Yes | 3-1 | | | | |
|-----------------|-----|--|-------|-------------|--|--|--|--|
| | | | INo | Replace | | | | |
| | | | | compressor | | | | |
| 3 | | Temporarily remove ignition plugs from all cylinders. | | | | | | |
| Engine | 3-1 | Can the engine crank be rotated? (To rotate the crankshaft, follow the | proce | dure in the | | | | |
| | 3-1 | Periodic Inspection and Parts Replacement Manual.) | | | | | | |
| | | Replace engine if the engine crankshaft does not rotate. | | | | | | |

- For board and Electrical Wiring Diagram, see Chapter 6.
 - Outdoor main board: page VI-2
 - Outdoor power board: page VI-3
 - Converter board: VI-4
 - Indoor control board for DC motor models: page VI-5
 - Outdoor Unit Electrical Wiring Diagram: page VI-6

A17 CT Error (Starter Current Detection Failure)

① Error detection method

When the starter power primary current meets the following conditions, an error is determined upon 5 occurrences in 1 hour.

• During cranking: With no detection of starter current, and with revolution speed pulse detected, when 5 seconds pass during cranking or when engine attains complete combustion.

| 1 | 1-1 | Does the wiring from the starter power source magnet switch | Yes | 1-2 |
|--------------------------|-----|---|------------------------------|----------------------------|
| CT1 | 1-1 | (52S) terminal No. 1 pass through CT1 (current sensor)? | No | Repair wiring |
| (Current sensor 1) | 1 2 | Use a clamp meter on the R-phase wiring of the starter power source to measure the current during cranking. Was the | Yes | 1-3 |
| | 1-2 | | No | 2-1 |
| | 1-3 | Is there a voltage of AC 0.5V or more between outdoor main board connector 3P (yellow) CN063 No. 1 and No. 3 during cranking? | Yes | Replace outdoor main board |
| | | | No | Replace current sensor 1 |
| 2 | | | Yes | Repair wiring |
| Starter power 2-1 source | | No | Replace starter power source | |

- For work procedure for replacing outdoor main board, see "5. Reference Document".
- For board and Electrical Wiring Diagram, see Chapter 6.
 - Outdoor main board: page VI-2
 - Outdoor power board: page VI-3
 - Converter board: VI-4
 - Indoor control board for DC motor models: page VI-5
 - Outdoor Unit Electrical Wiring Diagram: page VI-6* Reference (Electrical Wiring Diagram C D-1 2)

A19 Low Coolant Temperature

① Error detection method

• If the temperature of the coolant does not exceed 60°C during engine operations (complete combustion,) the engine will be momentarily halted. (The time varies between 30 to 60 minutes depending on the temperature.)

An emergency shutdown will occur when the engine has been halted twice because of this error. The cumulative number of times will be reset when the coolant maintains a temperature of 60°C or more or exceeds 85°C.

② Troubleshooting

| 1 Coolant temperature sensor | 1-1 | Disconnect relay connector 2P-12 (green) on the coolant temperature sensor and then measure the resistance. Measure the surface temperature and compare the results. | ок | 2-1 |
|---------------------------------------|-----|---|-----|--|
| | 1-1 | (See "5. Reference Document" for details on thermistor characteristics.) | NG | Replace the coolant temperature sensor |
| 2 | | Disconnect the three-way coolant valve and check to see | ОК | 3-1 |
| Three-way coolant valve | 2-1 | if it is locked. (Check power source initialization and the current output with actual valve operations.) Is the valve malfunctioning? | NG | Replace the three-way coolant valve |
| 3 Exhaust | 3-1 | Is the exhaust heat collection valve locked open? | ок | Replace the outdoor unit's main board |
| heat collection | | | NG | 3-2 |
| valve | 3-2 | Is the wiring to the exhaust heat collection valve severed or short-circuited? | ОК | 3-3 |
| | | | NG | Repair Wiring |
| | | Replace the exhaust heat collection valve (solenoid valve ASSY) and perform a test run. Does the coolant temperature rise? | Yes | Keep an eye on the situation |
| | | | No | Replace the outdoor unit's main board |

- For work procedure for replacing outdoor main board, see "5. Reference Document".
- For board and Electrical Wiring Diagram, see Chapter 6.
 - Outdoor main board: page VI-2
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 - Converter board: VI-4
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 - Outdoor Unit Electrical Wiring Diagram: page VI-6

• 1-1

Resistance values of the coolant temperature sensor (see the chart on thermistor characteristics for further details.)

40°C: 1.2kΩ 50°C: 879Ω 60°C: 642Ω 70°C: 477Ω

80°C: 361Ω 90°C: 227Ω 100°C: 216Ω

• 3-1

Check to make sure the exhaust heat collection valve is not locked open by following the instructions below.

- 1) Use the [Off] button on the remote controller to stop the outdoor unit in order to completely close the exhaust heat collection valve. Note: The valve will not be completely opened if the [STOP-SW] on the outdoor unit's main board is used to halt operations. The [Off] switch on the remote controller or the enforced thermo-off switch on the outdoor unit's main board must be used without fail.
- 2) Disconnect the connector (CN0725P white) on the exhaust heat collection valve after three or more minutes have elapsed since the outdoor unit was powered off.
- 3) Resume operations of the outdoor unit in the heater mode. (Either as a test run or with remote controller operations.)
- 4) Once the outdoor unit is operating, measure the temperature of the exhaust heat collection valve's secondary duct for approximately two minutes.
- 5) If it is clear that the temperature has dropped in comparison with the situation before start-up, then there is a chance that the valve is locked open. Everything is normal if the temperature does not drop. Note: Keep the operation time to a maximum of five minutes.
- 6) Once the inspection is completed, make sure the exhaust heat collection valve connector is reconnected and the power source reset.
- * If the power source is not reset, it will be impossible for the exhaust heat collection valve to be positioned, which will hinder subsequent operations.

A20 High Coolant Temperature

① Error detection method

When the coolant temperature $\geq 100^{\circ}$ C continuously for 2 seconds or when the coolant temperature is $\geq 95^{\circ}$ C for 3 consecutive seconds during engine operations (complete combustion,) the engine will be momentarily shut down and an error flag set.

The reason for the engine shutting down is because the error flag was set five times consecutively.

② Troubleshooting

| 1 Pump rotation | 1-1 | Is the coolant pump rotating during operations? | Yes | 2-1 |
|-------------------------|-----|---|-----|--|
| | | | No | See A22 |
| 2 Coolant circuit | | Is the three-way electric coolant valve at the engine outlet operating normally? | Yes | 2-2 |
| | 2-1 | | No | Repair or replace the three-way valve |
| | 2-2 | Are there any signs of coolant discharge from the reserve tank? | Yes | 2-4 |
| | | | No | 2-3 |
| | 2-3 | Is there air in the coolant? | Yes | Purge the air |
| | 2-3 | | No | 3-1 |
| | 2-4 | Is coolant leaking or seeping, etc., from the coolant hose? | Yes | Purge the air after repairs |
| | | | No | Purge the air |
| 3 | 3-1 | Disconnect relay connector 2P-12 (green) on the coolant temperature sensor and then measure the resistance. Measure the surface temperature and compare the results. (See "5. Reference Document" for details on thermistor characteristics.) | ОК | 3-2 |
| Sensor check | | | NG | Replace the coolant temperature sensor |
| | 3-2 | When the coolant temperature sensor relay connector has been reconnected, display the coolant temperature (No. 0dAtA data code 20) on the 7-segment LED on the outdoor unit's main board. Compare this to the actual temperature measured on the surface. | ОК | 3-4 |
| | | | NG | 3-3 |
| | 3-3 | Is there any water, etc. on relay connector 2P-12 (green)? | ОК | Replace the outdoor unit's main board |
| | | | NG | Repair |
| | 3-4 | Is the exhaust heat collection valve locked closed during heating operations? (This does not need to be checked if A20 occurred in the cooling mode.) | ОК | Replace the outdoor unit's main board |
| | | | NG | Replace the exhaust heat collection valve (motor-operated valve ASSY) |

- For work procedure for replacing outdoor main board, see "5. Reference Document".
- For board and Electrical Wiring Diagram, see Chapter 6.
 - Outdoor main board: page VI-2
 - Outdoor power board: page VI-3
 - Converter board: VI-4
 - Indoor control board for DC motor models: page VI-5
 - Outdoor Unit Electrical Wiring Diagram: page VI-6
 - * Reference (Electrical Wiring Diagrams A B-3: coolant pump) (Electrical Wiring Diagrams D - E: sensor)

• 2-1

Three-way electric coolant valve inspection

- 1) Operate the engine in the cooling mode, and measure the surface temperature of tubing flowing to the 2F outdoor heat exchanger.
- 2) Confirm that the coolant temperature is rising, and that the coolant is flowing toward 2F. First opened: 70°C / Fully open: 80°C

• 2-3

The air discharge hose must not be emitting large amounts of bubbles. Air bleed cock on the tube leading from the engine outlet (between the wax valve.)

3-1

Resistance values of the coolant temperature sensor (see the chart on thermistor characteristics for further details.)

40°C: 1.2kΩ 50°C: 879Ω 60°C: 642Ω 70°C: 477Ω

80°C: 361Ω 90°C: 227Ω 100°C: 216Ω

• 3-4

Check to make sure the exhaust heat collection valve is not locked closed by following the instructions below.

- 1) Resume operations of the outdoor unit in the heater mode. (Either as a test run or with remote controller operations.)
- 2) Once the outdoor unit is operating, measure the temperature of the exhaust heat collection valve's secondary duct for approximately two minutes. (see fig. A19301.)
- 3) If it is clear that the temperature has not dropped in comparison with the situation before start-up, then there is a chance that the valve is locked closed. Everything is normal if the temperature does not drop.

A21 Coolant Level Error

① Error detection method

- A flag will be set if the possibility of air entering the coolant circuit is detected during air-mix confirmation operations prior to starting the engine (complete combustion.) (The engine will continue to operate.) An error will be triggered if this possibility is detected three consecutive times.
- * However, there are also cases in which the error will be triggered after only one detected when operating after the [Automatic Air Purge Mode] ([S Air]) or when the engine is first started after an A21 error has been reset.

| | _ | | | |
|---|-----|---|-----|---|
| 1 | 1-1 | Is the prescribed amount of coolant in the reserve tank? | Yes | 3-1 |
| Coolant level check | | | No | 2-1 |
| 2 Coolant leakage check | 2-1 | Are there any external signs of coolant leaks? Check visually. | Yes | Repair |
| | | | No | 2-2 |
| | 2-2 | Can any coolant be confirmed in the oil pan? | Yes | Replace the engine head or packing |
| | | | No | 2-3 |
| | 2-3 | Remove the drain hose from the exhaust gas heat exchanger and operate the pump. Is any coolant emitted from the outlet? | Yes | Replace the exhaust gas heat exchanger |
| | | | No | 3-1 |
| 3 | 3-1 | Can any air be confirmed in the coolant circuit? | Yes | 3-2 |
| Air-mix check | | | No | 4-1 |
| | 3-2 | Does air continue to be emitted no matter how many times the air purging process is performed? | Yes | 3-3 |
| | | | No | End after air purge |
| | 3-3 | Does air continue to be emitted even after the engine has been shut down? | Yes | Check for leaks on the plate heat exchanger and repair if necessary. |
| | | | No | Replace the engine head or packing |
| 4 Coolant pump | 4-1 | Are there any severed wires, defective contacts or short circuits on the coolant pump's lock? | Yes | Replace the coolant pump |
| check | | | No | 5-1 |
| 5 Coolant electric three-way valve check | 5-1 | Is the coolant electric three-way valve operating normally? | Yes | If the problem reoccurs, replace the outdoor unit's power board or main board and keep an eye on the situation. |
| | | | No | Replace the three-way coolant valve. |

- For work procedure for replacing outdoor main board, see "5. Reference Document".
- For board and Electrical Wiring Diagram, see Chapter 6.
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 - Indoor control board for DC motor models: page VI-5
 - Outdoor Unit Electrical Wiring Diagram: page VI-6

A22 Coolant Pump Error

① Error detection method

Errors can be determined when coolant pump rotations and driving meet the following conditions.

- When an error is triggered once owing to the coolant pump revolutions not increasing or not being able to be detected when the engine is started up.
- When either overcurrent, insufficient revolutions or excessive revolutions are detected in the coolant pump when the engine is operating, the engine will be momentarily halted and an error flag set. The reason for the engine being shut down is due to the error flag being triggered five consecutive times in one hour.

| 1 Power source check | 1-1 | Is the voltage being supplied to the outdoor unit normal? (Check to see whether the voltage is too low or unstable) | Yes | 2-1 |
|------------------------------------|-----|--|-----|--------------------------|
| | | | No | Repair the power source |
| 2 Coolant pump | 2-1 | Are there any bad power cable connections when 3-phase equipment is in use? Or, is the power cable severed or the connection faulty? | Yes | 2-2 |
| | | | No | Repair the power cable |
| | 2-2 | Is the coolant pump locked or are there any severed wires, poor contacts or short circuits? (Coil resistance should be around 14-18 Ω for each phase.) | Yes | 3-1 |
| | | | No | Replace the coolant pump |
| 3 Coolant circuit | 3-1 | Has air entered the coolant circuit? (There is a chance of air having entered the circuit if there is a slight banging noise and pump revolutions are fluctuating during coolant pump operations.) | Yes | 4-1 |
| | | | No | Perform an air purge |
| 4 Outdoor unit's power board | 4-1 | Replace the outdoor unit's power board and keep an eye on the situation. Replace the coolant pump if the problem reoccurs. | | |

- For board and Electrical Wiring Diagram, see Chapter 6.
 - Outdoor main board: page VI-2
 - Outdoor power board: page VI-3
 - Converter board: VI-4
 - Indoor control board for DC motor models: page VI-5
 - Outdoor Unit Electrical Wiring Diagram: page VI-6 *Reference (Electrical Wiring Diagram A-B-3)

A23 Crankshaft Angle Sensor Error A24 Camshaft Angle Sensor Error

① Error detection method

When input from the sensor meets the following conditions, an error is determined upon 5 consecutive occurrences in 1 hour.

- When starter current was detected during cranking, but crank angle sensor input is not detected for 2 continuous seconds.
- When starter current was detected during cranking, but cam angle sensor input is not detected for 3 continuous seconds.

| 1 | 1-1 | | Yes | 1-3 |
|----------------|--|---|-----|-----------------|
| Crank angle | | Does the starter operate? | No | 1-2 |
| sensor trouble | 4.0 | Check starter S terminal for short circuit or ground fault, | ОК | Replace starter |
| | 1-2 | and starter B terminal for broken wire. | NG | Repair wiring |
| | 1-3 | Poor connection or broken wire in crank angle sensor | | Repair wiring |
| | | wiring? | No | 1-4 |
| | Replace outdoor main board. If NG, replace sensor. | | | |
| 2 | 0.4 | Poor connection or broken wire in cam angle sensor wiring? | Yes | Repair wiring |
| Cam angle | 2-1 | | No | 2-2 |
| sensor trouble | 2-2 | Replace outdoor main board. If NG, replace sensor. | | |

- For work procedure for replacing outdoor main board, see "5. Reference Document".
- For board and Electrical Wiring Diagram, see Chapter 6.
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 - Outdoor Unit Electrical Wiring Diagram: page VI-6 * Reference (Electrical Wiring Diagram B F-1 2)

A25 Clutch Error

① Error detection method

A Clutch Error fault is detected when clutch coil temperature or clutch 2 coil temperature is 110°C or more for up to 1 minute.

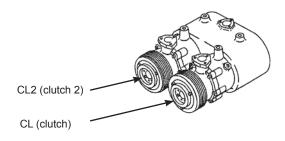
Error is detected with one occurrence.

② Troubleshooting

*The compressor uses a twin clutch specification. Inspect both clutch 1 and clutch 2.

| 1 Compressor | 1 1 | check for compressor lock. Locked? | Yes | Replace compressor |
|----------------------|-----|--|-----|----------------------------|
| lock | | (Both clutch 1 and clutch 2 are off, so be sure to turn the center of the pulley and not just the perimeter.) | | 2-1 |
| 2 Clutch coil 2-1 | | Use a contact thermometer to measure the temperature of the back of the pulley. Is this temperature nearly identical | ОК | Investigate further |
| sensor | 2-1 | (within 10°C) to that of clutch 1 and clutch 2 coil of the outdoor main board? | NG | 2-2 |
| | 2-2 | outdoor main board connector 2P (blue) CN060 and 2P | Yes | Repair wiring |
| | | | No | Replace clutch coil sensor |

- For board and Electrical Wiring Diagram, see Chapter 6.
 - Outdoor main board: page VI-2
 - Outdoor power board: page VI-3
 - · Converter board: VI-4
 - Indoor control board for DC motor models: page VI-5
 - Outdoor Unit Electrical Wiring Diagram: page VI-6



• 2-1

See Chapter 5 for procedure to view clutch and clutch 2 coil temperature on the outdoor main board.

A26 Flameout Error

① Error detection method

• An error is determined when the engine revolution speed fluctuates widely during engine operation. The engine is stopped and an error flag is set.

A flameout error is assumed when this flag has shut down the engine 5 consecutive times in 1 hour.

| © 110uoi¢siiootii | -0 | | | | | |
|-------------------|-----|---|-----|-----------------------|--|--|
| 1 | 4.4 | Are sparks emitted properly? | Yes | 1-2 | | |
| Ignition system | 1-1 | | No | 1-3 | | |
| error | 4.0 | Draway invition timing? | OK | 2-1 | | |
| | 1-2 | Proper ignition timing? | NG | Adjust timing | | |
| | 1-3 | Any poor connection/contact/crimping and broken wires in wiring between the outdoor main board connector 6P | Yes | Repair wiring | | |
| | | (white) CN010, 6P (black) CN011 and each IG coil (igniter)? | No | 1-4 | | |
| | 1-4 | Ignition plug working properly? | Yes | 1-5 | | |
| | | | No | Replace ignition plug | | |
| | 1-5 | Try replacing the IG coil (igniter). If fault persists after replacement, replace the outdoor main board. | | | | |
| 2 | 2.1 | Measure compression (See A06 5-1). | ОК | 3-1 | | |
| Engine unit | 2-1 | | NG | 2-2 | | |
| error | 2-2 | Wash valve and adjust valve clearance. If still NG, replace engine head. | | | | |
| 3 | 0.4 | Check operation of fuel gas regulating valve and throttle (step motor). Operating properly? | Yes | 3-2 | | |
| Fuel regulating | 3-1 | | No | Replace | | |
| system error | 3-2 | Inspect zero governor. Operating properly? | Yes | 3-3 | | |
| | | | No | Restore | | |
| | 3-3 | Air intake occurring? Check rubber plug on intake manifold, etc. | | | | |

- For work procedure for replacing outdoor main board, see "5. Reference Document".
- For board and Electrical Wiring Diagram, see Chapter 6.
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 - Outdoor Unit Electrical Wiring Diagram: page VI-6
- 1-2
 - 1-2 See Chapter 5 for timing adjustment.

A27 Catalyst Temperature Error (for only models with catalyst option)

① Error detection method

• When a catalyst temperature exceeding 700°C is detected continuously for 10 seconds during engine operation, the engine is stopped and an error flag is set.

A Catalyst Temp. Trouble is assumed when this flag has shut down the engine 5 consecutive times in 1 hour.

② Troubleshooting

| 1 | 4.4 | Charlette wining and compactors Frankling OV2 | Yes | 1-2 |
|------------|------------------------------------|---|-----|----------------------------|
| Unit error | 1-1 | Check the wiring and connectors. Everything OK? | | Repair wiring |
| | 1-2 Thermistor operating properly? | | OK | 1-3 |
| | 1-2 | Thermistor operating properly? | NG | Replace thermistor |
| | 1-3 | Inspect ignition timing. Everything OK? | Yes | Replace outdoor main board |
| | | | No | Adjust |

- For work procedure for replacing outdoor main board, see "5. Reference Document".
- For board and Electrical Wiring Diagram, see Chapter 6.
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 - Outdoor Unit Electrical Wiring Diagram: page VI-6
- 1-2 Thermistor resistor values

| 100°C | 96.0ΚΩ |
|-------|------------------|
| 200°C | 13.5ΚΩ |
| 300°C | 3.3 K Ω |
| 400°C | 1.15ΚΩ |
| 500°C | 514Ω |
| 600°C | 268Ω |
| 650°C | 198Ω |
| 700°C | 151Ω |
| 750°C | 122Ω |
| 800°C | 98Ω |

• 1-3 See Chapter 5 for timing adjustment.

A28 Generator Error (for only High Power Multi)

① Error detection method

A generator error may be assumed if an error occurs with the generator or the generator belt.

- Phase interruptions occur owing to the generator wiring being severed.
- A short-circuit has occurred between the generator wiring or inside the generator.
- When a defect, such as no generator belt or a severed generator belt, exists.
- When the cooling fan has been disconnected or when a fan for another engine has been installed.

| 1 | 1-1 | Is the generator belt connected to the engine? Is it slipping, etc? | Yes | 1-2 |
|----------------------|-----|--|-----|------------------------------------|
| Generator belt check | | | No | 2-1 |
| 1-2 | | Is the generator making any strange noises? | | Replace the belt and the generator |
| | | | No | Replace only the belt |
| 2 | | Does the generator have a severed wire or a short-circuit? | | Replace the generator |
| Generator check | 2-1 | (The resistance for each phase on the generator terminals should normally be between 1.5 and 2.0 Ω .) | No | Replace the generator wiring |

- It is possible to perform back-up operations (operations as a standard unit) with the following operations during break-downs.
 - 1. Disconnect the generator belt.
 - 2. Disconnect all converter wires.
 - 3. Set [Gen (generator parameter)] on the [No.10 First] outdoor unit initialization settings to [3 (no generator)].
- Perform the following operations to restore the unit to generate power (normal high-power function operations)
 - 1. Install a generator belt and check the tension (see the Regular Replacement Manual.)
 - 2. Reconnect off converter wires. (1 and 2 are only used when replacing parts and during back-up operations.)
 - 3. Set [Gen (generator parameter)] on the [No.10 First] outdoor unit initialization settings to [1 (generate power)].

A29 Converter Error (for only High Power Multi)

① Error detection method

Converter Error is assumed when an error occurs in the converter.

- When wires are broken or short-circuit has occurred in converter elements.
- When a converter circuit is damaged.
- When the TR temperature sensor and generator temperature sensor connectors are not connected to the converter board.

| 1 | Are the TR temperature sensor and generator temperature | Yes | Replace the converter |
|-----------------|---|-----|-----------------------|
| Connector check | | | Connect the connector |

- It is possible to perform back-up operations (operations as a standard unit) with the following operations during break-downs.
 - 1. Disconnect the generator belt.
 - 2. Disconnect all converter wires.
 - 3. Set [Gen (generator parameter)] on the [No.10 First] outdoor unit initialization settings to [3 (no generator)].
- Perform the following operations to restore the unit to generate power (normal high-power function operations)
 - 1. Install a generator belt and check the tension (see the Regular Replacement Manual.)
 - 2. Reconnect off converter wires. (1 and 2 are only used when replacing parts and during back-up operations.)
 - 3. Set [Gen (generator parameter)] on the [No.10 First] outdoor unit initialization settings to [1 (generate power)].

E01 Remote Controller Receive Failure

① Error detection method

1) When the indoor unit is connected

An error is determined when no incoming communication is received for 3 minutes.

- When 9 or more indoor units are wired into the remote controller group.
- When inspection (inspection pin) or TEST (test pin) on the indoor control board is short-circuited.
- When the non-volatile memory (EEPROM) is not inserted or has failed upon turning power ON.
- Indoor control board failure

2) When a water heat exchanger unit is connected

An error may be assumed when no communication addressed to you is received for three minutes.

- When power is not being supplied to the water heat exchanger unit.
- When the parallel array address has not been set or is incorrectly set.
- When the terminal resistor has not been set or is incorrectly set.
- When the remote control wire is severed, short-circuited, has a ground fault or the wrong polarity.
- When a source of noise is located nearby.
- When the water heat exchanger unit's control board or peripheral equipment is defective.

② Troubleshooting

1) When the indoor unit is connected

| / | | | | | |
|----------------------|-------|---|-------|------------------------------|--|
| 1 | 1-1 | Is auto-addressing complete? | Yes | 1-2 | |
| Auto-address | 1-1 | is auto-addressing complete? | No | 1-3 | |
| | 1-2 | Has auto-addressing failed (warning displayed on outdoor | OK | 1-3 | |
| | 1-2 | unit)? | NG | 2-1 | |
| | 1-3 | Perform pre-check before auto-addressing. (See "5. Refere | nce D | Document") | |
| 2 | 2-1 | In this indeer unit group controlled? | Yes | 2-2 | |
| Group control wiring | 2-1 | 2-1 Is this indoor unit group-controlled? | No | 3-1 | |
| Willing | 2-2 | Are any indoor units wired into the remote controller group | Yes | Turn power ON | |
| | 2-2 | turned OFF? | No | 2-3 | |
| | 2-3 | Are 9 or more indoor units connected to one remote | Yes | Repair wiring | |
| | 2-3 | controller group wiring? | No | 2-4 | |
| | 2-4 | Was the remote controller group wiring modified after auto-addressing was complete? Or, were group settings | Yes | 2-5 | |
| | 2-4 | changed using the remote controller properties setting mode? | | 3-1 | |
| | 2-5 | main unit present in remote controller group wiring $ ightarrow$ Repeat auto-addressing. | | | |
| 3 | 3-1 | Is the inspection pin (CN062/CN071) or TEST pin (CN064) on the indoor control board short-circuited? | Yes | Eliminate short-circuit | |
| Indoor control board | | | No | 3-2 | |
| board | 3-2 | Is an option board (CN060) or wireless remote controller | Yes | 3-3 | |
| | J-Z | (CN041) connected to the indoor control board? | | 3-5 | |
| | 3-3 c | Does E01 disappear several minutes after disconnecting said connector on the indoor control board? (When controlling with two remote controllers and the wireless | Yes | 3-4 | |
| | | remote controller is the main, set the other remote controller as the main). | No | 3-5 | |
| | 3-4 | Replace the removed option board or wireless remote controller operating unit, wiring and all. | | | |
| | 3-5 | Is the LED (D002) blinking on the indoor control board? | Yes | 3-6 | |
| | 3-5 | is the LED (D002) billiking on the indoor control board? | No | 3-7 | |
| | 3-6 | Nonvolatile memory (EEPROM) on the outdoor main unit is inserted or is defective → Correct or replace nonvolatile meremote controller properties setting mode. | | | |
| | | Chart aircuit or migrauting in indeed with accords | Yes | Repair wiring | |
| | 3-7 | Short-circuit or misrouting in indoor unit remote controller wiring? | No | Replace indoor control board | |
| | | | | | |

- The designation (/) is used in the table to indicate indoor boards for DC and AC motor models.
- There is no TEST pin on the indoor board for AC motor models.
- See "5. Reference Document" for checking remote controller.
- For board and Electrical Wiring Diagram, see Chapter 6.
 - Outdoor main board: page VI-2
 - Outdoor power board: page VI-3
 - Converter board: VI-4
 - Indoor control board for DC motor models: page VI-5
 - Outdoor Unit Electrical Wiring Diagram: page VI-6
- See instructions packaged with servicing indoor board for procedure on replacing indoor non-volatile memory (EEPROM) and replacing indoor control board.

2) When the water heat exchanger unit is connected

| 1 | 1-1 | Is electricity being supplied to the water heat exchange | Yes | 2-1 |
|--------------------------|-----|--|-----|---|
| Unit power | 1-1 | unit? | No | Switch on the power |
| 2 | 2-1 | Has an address been set in the remote controller? | | 2-2 |
| Remote controller | 2-1 | | | Set the address |
| (parallel array) | 2-2 | Is the address set in the remote controller a serial | Yes | 2-3 |
| address | 2-2 | number? | No | Set a serial number |
| | 2-3 | Do the addresses on the remote controller and on the | Yes | 2-4 |
| | 2-3 | water heat exchange unit match up? | No | Match up t he addresses |
| | | Does the number of addresses on the remote controller | Yes | 2-5 |
| | 2-4 | match up with the number of water heat exchanger units? | No | Match up the number of connected units |
| | | le the perallel array address on the water heat evaluation | Yes | 2-6 |
| | 2-5 | Is the parallel array address on the water heat exchanger unit set at anything other than [0]? | | Set any parallel array address other than [0] |
| | | , | | 3-1 |
| | 2-6 | the parallel array address on the water heat exchanger nit set at [1 - 5]? | | Set the parallel array address at [1 - 5] |
| 3 | | Are the terminating resistance switches on the remote | Yes | 4-1 |
| Terminating resistance | 3-1 | controller and on water heat exchanger unit's control board located at both ends of the wire linking the remote controller with the water heat exchanger unit set at [ON]? | | Set the terminating resistance for both ends of the link wire to [ON] |
| 4 | 4-1 | Is the remote controller's wire severed (connector or | Yes | Repair the severed wire |
| Remote controller | 4-1 | terminal disconnected?) | No | 4-2 |
| wires (wires | 4-2 | Is the remote controller's wire short-circuited? | Yes | Repair the short-circuit |
| linking between | 4-2 | is the remote controller's wife short-circuited: | No | 4-3 |
| the remote controller to | 4-3 | Is the remote controller's wire grounded? | Yes | Repair the ground |
| the water heat | 4-3 | is the remote controller's wife grounded: | No | 4-4 |
| exchanger unit) | 4-4 | Is the remote controller's wire polarity (+-) reversed? | Yes | Switch the wires around |
| | 7-7 | is the remote controller's wife polarity (1-) reversed: | No | 4-5 |
| | 4-5 | Are the remote controller wire (TB5-4, TB5-5) and outdoor | Yes | Repair the wiring |
| | . 0 | unit wires (TB1-(1), (2)) connected to the wrong places? | No | 5-1 |
| 5 Noise | 5-1 | 1 Is a source of noise located nearby? | | Set up noise countermeasures |
| | | | No | 6-1 |

| 6 Water heat exchanger | | | Yes | Request improvements to the power facility manager |
|--|-----|--|-----|---|
| unit's control board and surrounding area | 6-1 | Is AC200V ±10% being applied between TB1 R and S? | No | Proceed to 6-2 after checking the wires and terminals are normal around TB1 |
| | 6-2 | Is the varister (VA1) grounded or severely deteriorated? | Yes | Replace the varister (VA1) |
| | | | No | 6-3 |
| | 6-3 | Has the power switch (SW1) been switched on? | Yes | Proceed to 6-4 after checking the wires around SW1 |
| | | | No | Set SW1 to ON |
| | | Are suitable DC voltages being applied to the circuits on the board? | Yes | 6-8 |
| | 6-4 | (Suitable DC voltage = approximately 5V between TP1 and 2, approximately 7V between TP3 and 4, and approximately 5V between TP5 and 6) | No | 6-5 |
| | | Is the varister (VA2) short-circuited between the phases or severely deteriorated? | Yes | Replace the varister (VA2) |
| | | | No | 6-6 |
| | 6-6 | Is electrical voltage being output to the secondary side of the fuses (F1, F2)? | Yes | 6-7 |
| | | | No | Check that the wiring and terminals around the fuses are normal and replace the fuses |
| | 6-7 | | Yes | 6-8 |
| | | Is electrical voltage being output to the secondary side of the noise filter (RF1?) | No | Check that the wiring and terminals around RF1 are normal and replace the RF1 |
| | 6-8 | le electrical voltage being output to the secondary side of | Yes | Replace the water heat exchanger unit's control board |
| | | Is electrical voltage being output to the secondary side of the power transformer (PT1?) | No | Check that the wiring and connectors around PT1 are normal and replace the PT1 |

- See "5. Reference Document" for details on the procedure for replacing the water heat exchanger unit's control board.
- For board and Electrical Wiring Diagram, see Chapter 6.
 Outdoor main board: page VI-2
 Outdoor power board: page VI-3
 Converter board: VI-4

 - Indoor control board for DC motor models: page VI-5
 Outdoor Unit Electrical Wiring Diagram: page VI-6

E02 Remote Controller Transmission Failure

① Error detection method

When the remote controller (controller) itself cannot transmit. Or, when a self-transmitted signal cannot be selfreceived or changes, an error is determined.

• Breakdown of remote controller itself

| 1 Remote | 1 1 | le this indoor unit group, controlled? | Yes | 1-2 |
|--------------------------|-----|--|---------|------------------------------|
| | 1-1 | Is this indoor unit group-controlled? | | 2-1 |
| controller group wiring | 1-2 | Any short-circuit or broken wires for remote controller group link wiring 1 (white) and 2 (black)? | | Repair wiring |
| | 1-2 | | | 2-1 |
| 2 | 2-1 | Is an option board (CN060) or wireless remote controller (CN041) | | 2-2 |
| Indoor control board 2-2 | 2-1 | connected to the indoor control board? | No | 2-4 |
| | 2-2 | connector on the indoor control board? (When controlling with two remote controllers and the wireless remote controller is the main, set | Yes | 2-3 |
| | | | No | 2-4 |
| | 2-3 | Replace the removed option board or wireless remote controller opera | iting u | ınit, wiring and all. |
| | 2-4 | | | Repair wiring |
| | | | No | Replace indoor control board |

- The designation (/) is used in the table to indicate indoor boards for DC and AC motor models.
- There is no TEST pin on the indoor board for AC motor models.
- See "5. Reference Document" for checking remote controller.
- For board and Electrical Wiring Diagram, see Chapter 6.
 - Outdoor main board: page VI-2
 - Outdoor power board: page VI-3
 - Converter board: VI-4
 - Indoor control board for DC motor models: page VI-5
 - Outdoor Unit Electrical Wiring Diagram: page VI-6
- See instructions packaged with servicing indoor board for procedure on replacing indoor control board.

E03 Indoor Unit Receive Failure from Remote Controller (Central)

① Error detection method

1) With indoor unit connected

An error is determined when no transmission is received from the remote controller (central) for 3 minutes, or when no transmission is received from the central equipment for 15 minutes.

- When transmission had been normal but the remote controller wiring became broken or misrouted.
- Broken indoor and outdoor operating wiring to central control equipment.
- Only sub remote controller is set.
- No remote controller, with central control equipment power OFF.
- No remote controller, and only sub remote controller is set.

2) When the water heat exchanger unit is connected

An error may be assumed when communication from the remote controller is not received by the water heat exchanger unit for 3 minutes.

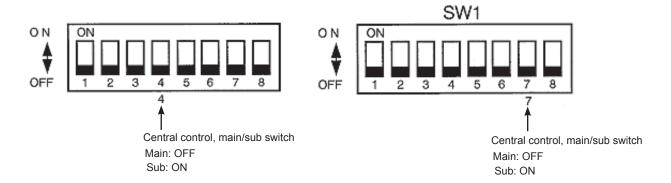
- When power is not being supplied to the remote controller.
- When the parallel array address has not been set or is incorrectly set.
- When the terminal resistor has not been set or is incorrectly set.
- When the remote control wire is severed, short-circuited, has a ground fault or the wrong polarity.
- When a source of noise is located nearby.
- When the remote controller or peripheral equipment is defective.

② Troubleshooting

1) When the indoor unit is connected

| 1 | 1-1 | le control control equipment connected? | Yes | 1-2 | | |
|-------------------|-----|--|--------|------------------------------|--|--|
| Central | 1-1 | Is central control equipment connected? | No | 2-1 | | |
| control equipment | 1.0 | le the central central equipment never OFF2 | Yes | Turn power ON | | |
| | 1-2 | Is the central control equipment power OFF? | No | 1-3 | | |
| | 1-3 | Are all the central control main-sub switches on the connected | Yes | 1-4 | | |
| | 1-3 | central control equipment set to "sub"? | No | 1-5 | | |
| | 1-4 | Of the connected central control equipment, set only the highest-ranking central control unit o "main", and set the remaining units to "sub". Ranking order from high to low: AMY adapter → intelligent controller → system controller → multi-controller. | | | | |
| | 1-5 | Are any broken indoor and outdoor operating wires connected to central control equipment? (See "5. Reference Document") | | Repair wiring | | |
| | 1-5 | | | 2-1 | | |
| 2 | 2.1 | Is this indoor unit group-controlled? | Yes | 2-2 | | |
| Remote controller | 2-1 | | No | 3-1 | | |
| Controller | 2-2 | Any broken wires for remote controller group link wiring 1 | Yes | Repair wiring | | |
| | 2-2 | (white) and 2 (black)? | No | 3-1 | | |
| 3 | 3-1 | (CNICAL) | Yes | 3-2 | | |
| Indoor | 5-1 | | No | 3-4 | | |
| board | 3-2 | Does E03 disappear several minutes after disconnecting said connector on the indoor control board? (When controlling with | Yes | 3-3 | | |
| | 3-2 | two remote controllers and the wireless remote controller is the main, set the other remote controller as the main). | | 3-4 | | |
| | 3-3 | Replace the removed option board or wireless remote controlle | er ope | rating unit, wiring and all. | | |
| | | Short circuit misrouting or broken wires in indeer unit remote | Yes | Repair wiring | | |
| 3- | | Short-circuit, misrouting, or broken wires in indoor unit remote controller wiring? | | Replace indoor control board | | |

- The designation (/) is used in the table to indicate indoor boards for DC and AC motor models.
- There is no TEST pin on the indoor board for AC motor models.
- See "5. Reference Document" for checking remote controller.
- For board and Electrical Wiring Diagram, see Chapter 6.
 - Outdoor main board: page VI-2
 - Outdoor power board: page VI-3
 - Converter board: VI-4
 - Indoor control board for DC motor models: page VI-5
 - Outdoor Unit Electrical Wiring Diagram: page VI-6
- See instructions packaged with servicing indoor board for procedure on replacing indoor control board.



Multi-Controller

System Controller

2) When the water heat exchanger unit is connected

| | | ineat exemanger and is connected | | |
|---|---------|---|-----|--|
| 1 Remote | 1-1 | Is power being supplied to the remote controller? | Yes | 2-1 |
| controller power | 1-1 | to power being supplied to the remote controller: | No | Switch on the power |
| 2 | 0.4 | | Yes | 2-2 |
| Remote | 2-1 | Has an address been set on the remote controller? | No | Set the address |
| controller (parallel | 0 | le the and durant action the annual to another the residence | Yes | 2-3 |
| array) | 2-2 | Is the address set in the remote controller in series? | No | Set a serial number |
| address | 2-3 | Do the address on the remote controller and on the water heat | Yes | 2-4 |
| | 2-3 | exchanger unit match up? | No | Match up the addresses |
| | | Door the museless of addresses on the seconds controlles weetch | Yes | 2-5 |
| | 2-4 | Does the number of addresses on the remote controller match up with the number of water heat exchanger units? | No | Match up the number of connected units |
| | | le the parallel array address on the water heat evolunger unit | Yes | 2-6 |
| | 2-5 | Is the parallel array address on the water heat exchanger unit set at anything other than [0]? | No | Set any parallel array address other than [0] |
| | | | Yes | 3-1 |
| | 2-6 | Is the parallel array address on the water heat exchanger unit set at [1 - 5]? | No | Set the parallel array address at [1 - 5] |
| 3 | | Are the terminal resistor switches on the remote controller and | Yes | 4-1 |
| Terminal resistor | 3-1 | on water heat exchanger unit's control board located at both ends of the wire linking the remote controller with the water heat exchanger unit set at ON? | No | Set the terminal resistor for both ends of the link wire to ON |
| 4 | 4-1 | is the remote controller of wire develor (confidence of terminal | Yes | Repair the severed wires |
| Remote controller | 4-1 | | No | 4-2 |
| wires | 4-2 | Is the remote controller's wire short-circuited? | Yes | Repair the short-circuit |
| (wires | 4-2 | | No | 4-3 |
| linking between | 4-3 | | Yes | Repair the ground |
| the remote | 4-5 | | No | 4-4 |
| controller | 4-4 | Is the remote controller's wire polarity (+-) reversed? | Yes | Switch the wires around |
| to the water heat | 7-7 | is the remote controller's wire polarity (1-) reversed: | No | 4-5 |
| exchanger | 4-5 | Are the remote controller wire (TB5-4, TB5-5) and outdoor | Yes | Repair the wiring |
| unit) | т о | unit wires (TB1-①, ②) connected to the wrong places? | No | 5-1 |
| 5 Noise | 5-1 | Is a source of noise located nearby? | Yes | Set up noise countermeasures |
| | | | No | 6-1 |
| 6 | | | Yes | 6-2 |
| Remote controller or peripheral equipment | 6-1 | Have the settings been made in accordance with the remote controller's instruction manual? | No | Repair the settings in accordance with the instruction manual |
| equipilient | | Does a renairable fault exist in the remoter controller or | Yes | Restore |
| | 6-2 | Does a repairable fault exist in the remoter controller or remote controller board? | No | Replace the remote controller |

- For board and Electrical Wiring Diagram, see Chapter 6.
 Outdoor main board: page VI-2
 Outdoor power board: page VI-3

 - Converter board: VI-4
 - Indoor control board for DC motor models: page VI-5
 - Outdoor Unit Electrical Wiring Diagram: page VI-6

E04 Indoor Unit Receive Failure from Outdoor Unit

- 1) When the indoor unit is connected
 - ① Error detection method

After turning power ON, with no transmission from outdoor unit for 3 minutes. Or, an error is determined when the outdoor unit does not respond.

- Outdoor unit power is OFF.
- With link wiring, when outdoor main board terminal resistor switch (S7) is set to "ON" for several units.
- When turning power ON after completing auto-addressing, when the number of indoor units has changed.
- When indoor unit power is not ON.
- Inspection pin (CN062/CN071) or TEST pin (CN064) on the indoor control board is short-circuited.
- Non-volatile memory (EEPROM) is not inserted when changing indoor board.
- In the remote controller detailed settings mode, the indoor address is "undetermined".
- · Indoor unit addresses duplicated
- Indoor/outdoor operation wiring is short-circuited or broken.
- Error in the reception circuit on the signal output board (option board)
- · Breakdown of outdoor unit
- High voltage (AC200V, etc) applied across indoor/outdoor operation wire circuit

| © Houbics | ② Troubleshooting | | | | | | |
|-------------------|-------------------|--|----------------------------------|----------------------------------|--|--|--|
| 1 Power | 1-1 | Is/was the outdoor unit power OFF? | Yes | Turn power ON and wait 3 minutes | | | |
| supply | | | No | 1-2 | | | |
| | 4.0 | La tha independent of the second OFFO | Yes | Turn power ON | | | |
| | 1-2 | Is the indoor unit power OFF? | No | 2-1 | | | |
| 2 | 0.4 | Indoor/outdoor operation wiring broken or short-circuited? | Yes | Repair wiring | | | |
| Indoor/ | 2-1 | (See "5. Reference Document") | No | 2-2 | | | |
| outdoor operation | 0.0 | With link wiring, is the outdoor main board terminal resistor | Yes | Set only one unit to "ON" | | | |
| wiring | 2-2 | switch (S010) set to "ON" for several units? | No | 2-3 | | | |
| | 2.2 | High voltage (AC200V, etc) applied across indoor/outdoor | Yes | 3-2 | | | |
| | 2-3 | l ' . ' | No | 3-1 | | | |
| 3 | 0.4 | Did the number of indoor units increase or decrease after | Yes | 3-2 | | | |
| Indoor unit | 3-1 | auto-addressing? | No | 3-3 | | | |
| count | 3-2 | Perform pre-check before auto-addressing. (See "5. Reference | g. (See "5. Reference Document") | | | | |
| | 2.0 | In the remote controller detailed settings mode, check the indoor unit address (item code 13). Any undetermined (99) or duplicated addresses for indoor units? | Yes | 3-2 | | | |
| | 3-3 | | No | 4-1 | | | |
| 4 | 4-1 | Is the inspection pin (CN062/CN071) or TEST pin (CN064) on the indoor control board short-circuited? | Yes | Eliminate short-circuit | | | |
| Indoor | 4-1 | | No | 4-2 | | | |
| control board | 4-2 | 2 13 dil option bodia (orvoco) di wilciess remote controlle | Yes | 4-3 | | | |
| | 4-2 | | No | 4-5 | | | |
| | 4.0 | Does E04 disappear several minutes after disconnecting said connector on the indoor control board? (When controlling with | Yes | 4-4 | | | |
| | 4-3 | two remote controllers and the wireless remote controller is the main, set the other remote controller as the main). | No | 4-5 | | | |
| | 4-4 | Replace the removed option board or wireless remote controlle | er ope | rating unit, wiring and all. | | | |
| | 4.5 | Le the LED (D002) blinking on the indeed control board? | Yes | 4-6 | | | |
| | 4-5 | Is the LED (D002) blinking on the indoor control board? | No | 4-7 | | | |
| | 4-6 | Nonvolatile memory (EEPROM) on the outdoor main unit is not inserted or is defective → Correct or replace nonvolatile memo controller properties setting mode. | | | | | |
| | 17 | Is E4 displayed on all remote controllers for other indoor units | Yes | Replace outdoor main board | | | |
| | 4-7 | connected to this outdoor unit? | No | Replace indoor control board | | | |

- The designation (/) is used in the table to indicate indoor boards for DC and AC motor models.
- There is no TEST pin on the indoor board for AC motor models.
- For board and Electrical Wiring Diagram, see Chapter 6.
 - Outdoor main board: page VI-2
 - Outdoor power board: page VI-3
 - Converter board: VI-4
 - Indoor control board for DC motor models: page VI-5
 - Outdoor Unit Electrical Wiring Diagram: page VI-6
- See instructions packaged with servicing indoor board for procedure on replacing indoor non-volatile memory (EEPROM) and replacing indoor control board.
- See "5. Reference Document" for checking remote controller.

2) When the water heat exchanger unit is connected

- ① An error may be assumed when no regular communication occurs between the outdoor unit and water heat exchanger unit for 3 minutes.
 - When the power to the outdoor unit has not been switched on.
 - When the terminating resistance switch (S010) on the outdoor unit's main board is set to [OPEN].
 - When the number of indoor units set with parameter No.10 on the outdoor unit's main board is anything other than two.
 - When the address switches on the water heat exchanger unit and outdoor unit do not match up.
 - When an error occurs with the indoor/outdoor operation wiring (short-circuit, severed wires, ground.)
 - When electrical voltage is applied to the indoor/outdoor operation wiring.
 - When the outdoor unit has broken down.
 - Effects of noise.

| © 110dblcsilot | 711115 | | | |
|---------------------------------|--------|---|-----|--|
| 1 Power supply | 1-1 | Is/was the outdoor unit power OFF? | Yes | Turn the power on and wait 3 minutes |
| | | | No | 2-1 |
| 2 | 2-1 | Is the terminating resistance switch (SW010) on the | Yes | 2-2 |
| Setting switches | 2-1 | outdoor unit's main board set at [SHORT]? | No | Correct to [SHORT] |
| Switches | 2-2 | Is the number of indoor units set at two? | Yes | 2-3 |
| | 2-2 | is the number of indoor drifts set at two: | No | Set [2 units] |
| | | | Yes | 3-1 |
| | 2-3 | Do the system addresses for the water heat exchanger unit and outdoor unit match up? | No | Make sure the water heat exchanger SW14 and the outdoor unit setting match up |
| 3 | 3-1 | Is the indoor/outdoor operation wiring severed (connectors, | Yes | Repair severed wires |
| Indoor/outdoor operation wiring | 3-1 | 3-1 | No | 3-2 |
| operation wiring | 3-2 | Is the indoor/outdoor operation wiring short-circuited? | Yes | Correct the short circuit |
| | 3-2 | | No | 3-3 |
| | 3-3 | Is the indoor/outdoor operation wiring grounded? | Yes | Correct the ground |
| | | | No | 3-4 |
| | 3-4 | electrical box's indoor/outdoor operation wiring located | Yes | 3-5 |
| | | | No | Repair |
| | | Is electrical voltage being applied to the indoor/outdoor | Yes | 3-6 |
| | 3-5 | operation wiring? (If no, the fuse (F1) on the outdoor unit's main board has blown.) | No | 4-1 |
| | | Denois the wising properly so that no electrical veltage is | Yes | Replace the outdoor unit's main board |
| | 3-6 | Repair the wiring properly so that no electrical voltage is applied. Is the outdoor unit's main board CN046 already in use? | No | Reverse the connectors on the outdoor unit's main board (CN045 → CN046) |
| 4 | 4.4 | Lies the cutdeen unit healen days 2 | Yes | Repair the malfunction |
| Outdoor unit breakdown | 4-1 | Has the outdoor unit broken down? | No | 5-1 |
| 5 Noise | 5-1 | Is a source of noise located nearby the outdoor unit? | Yes | Set up noise countermeasures |
| | 5-1 | is a source or noise located hearby the outdoor unit? | No | Replace the outdoor unit's main board |

- See "5. Reference Document" for details on the procedure for replacing the water heat exchanger unit's control board.
- For board and Electrical Wiring Diagram, see Chapter 6.

 - Outdoor main board: page VI-2Outdoor power board: page VI-3
 - Converter board: VI-4
 - Indoor control board for DC motor models: page VI-5
 - Outdoor Unit Electrical Wiring Diagram: page VI-6

E05 Indoor Unit Transmission Failure to Outdoor Unit

① Error detection method

When a self-transmitted signal cannot be self-received, an error is determined.

- Indoor (water heat exchanger unit) control board is defective.
- Outdoor main board terminal resistor switch setting is incorrect.

| 1 Indoor control | 1-1 | Is the indoor/outdoor operation wiring connected to | Yes | 1-2 |
|---------------------|-----|---|-----|---------------------------|
| | 1-1 | multiple outdoor units? (Link wiring?) | No | 1-3 |
| board | 1-2 | Is the S010 (terminal resistor) switch on one outdoor main | Yes | 1-4 |
| | | board set to "ON" and the remainder to "OFF"? | No | Set only one unit to "ON" |
| | 1-3 | Is the outdoor main board S010 (terminal resistor) switch set to "OFF"? | Yes | Set to "ON" |
| | | | No | 1-4 |
| | | Indoor/outdoor operation wiring broken or short-circuited? | Yes | Repair wiring |
| | 1-4 | | No | 1-5 |
| | 1-5 | Replace indoor (water heat exchanger unit) control board | | |

- See instructions packaged with servicing indoor board for procedure on replacing indoor control board.
- See "5. Reference Document" for details on the procedure for replacing the water heat exchanger unit's control board.

E06 Outdoor Unit Receive Failure from Indoor Unit

- 1) When the indoor unit is connected
 - ① Error detection method

An error is determined when no indoor unit transmission (response) is received for 3 minutes.

- Indoor unit power is OFF.
- Indoor unit DISP pin (CN063/CN072) is short-circuited.
- Indoor/outdoor operation wiring is short-circuited or broken.
- Indoor unit signal output board (option board) is defective.

② Troubleshooting

| 1 | 1 1 | In the indeer unit newer OFF2 | Yes | Turn power ON | |
|---------------------------------|--|---|-----|-------------------------|--|
| Indoor power source | 1-1 | Is the indoor unit power OFF? | No | 2-1 | |
| 2 | 2-1 | Indoor/outdoor operation wiring broken or short-circuited? | Yes | Repair wiring | |
| Indoor/outdoor operation wiring | 2-1 | coo "F. Poforonco Document") | No | 3-1 | |
| 3 | 3-1 | Is the DISP pin (CN063/CN071) or inspection pin (CN062/ | Yes | Eliminate short-circuit | |
| Indoor control board | 3-1 | CN071) on the indoor control board short-circuited? | No | 3-2 | |
| board | 3-2 | Is an option board (CN060) or wireless remote controller (CN041) connected to the indoor control board? | Yes | 3-3 | |
| | | | No | 3-5 | |
| | 3-3 | Does E06 disappear several minutes after disconnecting said connector on the indoor control board? (When controlling with two remote controllers and the wireless | Yes | 3-4 | |
| | | romate controller is the main, set the other remete | No | 3-5 | |
| | 3-4 | Replace the removed option board or wireless remote controller operating unit, wiring ar all. | | | |
| | 3-5 Indoor control board failure → Replace board | | | | |

- The designation (/) is used in the table to indicate indoor boards for DC and AC motor models.
- There is no TEST pin on the indoor board for AC motor models.
- For board and Electrical Wiring Diagram, see Chapter 6.
 - Outdoor main board: page VI-2
 - Outdoor power board: page VI-3
 - Converter board: VI-4
 - Indoor control board for DC motor models: page VI-5
 - Outdoor Unit Electrical Wiring Diagram: page VI-6
- See instructions packaged with servicing indoor board for procedure on replacing indoor control board.

2) When the water heat exchange unit is connected

① Error detection method

An error may be assumed when communication (response) from the water heat exchanger unit is not received by the outdoor unit for 3 minutes.

- When power is not being supplied to the water heat exchanger unit.
- When the outdoor unit address set for the water heat exchanger unit and the outdoor unit do not match up.
- When an error occurs with the indoor/outdoor operation wiring (short-circuit, severed wires, ground.)
- When electrical voltage is applied to the indoor/outdoor operation wiring.
- · When affected by noise.
- When the water heat exchanger unit's control board or peripheral equipment is defective.

| 1 | | Is electricity being supplied to the water heat exchanger | Yes | 2-1 |
|---------------------|-----|--|-----|--|
| Unit power supply | 1-1 | unit? | No | Switch on the power |
| 2 | | | Yes | 3-1 |
| Setting switches | 2-1 | Do the address settings for the water heat exchanger unit and outdoor unit match up? | No | Make sure the water heat exchanger SW14 and the outdoor unit setting match up |

| Remote controller wires (wires linking the remote controller to the water heat exchanger unit) Solution S | 0 | | | \/ | Danais account desires |
|--|--|-----|---|-----|--|
| controller wires (wires linking the remote controller to the water heat exchanger unit) 3-2 Is the indoor/outdoor operation wiring short-circuited? No 3-3 1s the indoor/outdoor operation wiring grounded? No 3-4 1s voltage being applied to the indoor/outdoor operational wiring? (If no, the fuse (F001) on the outdoor unit's main board has blown.) 4-1 Repair the wiring properly so that no electrical voltage is applied. Is the water heat exchanger unit's control board 2P-13 already in use? 4-1 Outdoor unit breakdown 5-1 Is a source of noise located nearby? 4-1 Water heat exchange unit's control board and surrounding area 6-1 Is AC200V ±10% being applied between R and S on TB1? 6-2 Is the varister (VA1) grounded or severely deteriorated? Are suitable DC voltages being applied to CN1 (6P-1)? (Suitable DC voltages being applied to CN1 (6P-1)? Tyland 2, approximately 7V between TP3 and 4, and No. 3-3 Yes Correct the short circuit No. 3-4 Yes Correct the short circuit No. 3-4 Yes Correct the short circuit. No. 3-4 Yes Correct the short circuit. No. 3-4 Yes 3-5 No. 4-1 Replace the water heat exchanger unit's control board and exchanger unit's control board. No. 5-1 Reverse the water heat exchanger unit's control board. No. 5-1 Set up noise countermeasures. No. 6-1 Proceed to 6-2 after having confirmed that the wiring and terminals are normal around TB1. Request improvements to the power facility manager. Replace the varister (VA1) No. 6-3 Proceed to 6-4 after having confirmed that the wiring is normal around SW1 No. Set SW1 to ON. Set SW1 to ON. | 3 Remote | 3-1 | | Yes | Repair severed wires |
| Section Sect | | | | | |
| the remote controller to the water heat exchanger unit) 3-3 Is the indoor/outdoor operation wiring grounded? 3-4 Is voltage being applied to the indoor/outdoor operational wiring? (If no, the fuse (F001) on the outdoor unit's main board has blown.) 3-5 Is period to the water heat exchanger unit's control board 2P-13 already in use? 4-1 P-13 already in use? 4-1 P-14 Has the outdoor unit broken down? 5-1 Is a source of noise located nearby? 6-1 Is a Source of noise located nearby? 6-2 Is the varister (VA1) grounded or severely deteriorated? 6-3 Is the power switch (SW1) on? Are suitable DC voltage = approximately 5V between TP3 and 4, and TP 1 and 2, approximately 7V between TP3 and 4, and TP 1 and 2, approximately 5V between TP3 and 4, and TP 1 and 2, approximately 5V between TP3 and 4, and TP 1 and 2, approximately 7V between TP3 and 4, and TP 1 and 2, approximately 5V between TP3 and 4, and TP 1 and 2, approximately 5V between TP3 and 4, and TP 1 and 2, approximately 5V between TP3 and 4, and TP 1 and 2, approximately 5V between TP3 and 4, and TP 1 and 2, approximately 5V between TP3 and 4, and TP 1 and 2, approximately 5V between TP3 and 4, and TP 1 and 2, approximately 5V between TP3 and 4, and TP 1 and 2, approximately 5V between TP3 and 4, and TP 1 and 2, approximately 5V between TP3 and 4, and TP 1 and 2, approximately 5V between TP3 and 4, and TP 1 and 2, approximately 5V between TP3 and 4, and TP 1 and 2, approximately 5V between TP3 and 4, and TP3 | | 3-2 | Is the indoor/outdoor operation wiring short-circuited? | | |
| the water heat exchanger unit) 3-3 Is the indoor/outdoor operation wiring grounded? Solution | | | a the mass of the same of the | No | 3-3 |
| exchanger unit) Section | | 3-3 | Is the indoor/outdoor operation wiring grounded? | Yes | Correct the ground |
| 3-4 wirring? (If no, the fuse (F001) on the outdoor unit's main board has blown.) Repair the wiring properly so that no electrical voltage is applied. Is the water heat exchanger unit's control board 2P-13 already in use? Repair the wiring properly so that no electrical voltage is applied. Is the water heat exchanger unit's control board 2P-13 already in use? Reverse the water heat exchanger unit's control board connectors (2P-12 2P-13) Reverse the water heat exchanger unit's control board connectors (2P-12 2P-13) Yes Repair the malfunction No 5-1 Set up noise countermeasures No 6-1 Is a source of noise located nearby? Yes countermeasures No 6-1 Is AC200V ±10% being applied between R and S on TB1? Request improvements to the power facility manager Yes (VA1) manager Yes (VA1) No 6-3 Replace the varister (VA1) No 6-3 Yes (VA1) Yes (VA1) No 6-3 Yes (VA1) No 6-3 Yes (VA1) No 6-3 Yes (VA1) No 6-3 Yes (VA1) | | 0 0 | to the indeen education withing greatided. | No | 3-4 |
| board has blown.) Repair the wiring properly so that no electrical voltage is applied. Is the water heat exchanger unit's control board 2P-13 already in use? Repair the wiring properly so that no electrical voltage is applied. Is the water heat exchanger unit's control board 2P-13 already in use? Repair the wiring properly so that no electrical voltage is applied. Is the water heat exchanger unit's control board 2P-13 already in use? Reverse the water heat exchanger unit's control board on section of the water heat exchanger unit's control board connectors (2P-12 | | 3-4 | | Yes | 3-5 |
| Repair the wiring properly so that no electrical voltage is applied. Is the water heat exchanger unit's control board 2P-13 already in use? 4-1 Outdoor unit breakdown 5 Noise 5-1 Is a source of noise located nearby? 4-1 Water heat exchange unit's control board and surrounding area 6-1 Is AC200V ±10% being applied between R and S on TB1? and surrounding area 6-2 Is the varister (VA1) grounded or severely deteriorated? 6-3 Is the power switch (SW1) on? Repair the wiring properly so that no electrical voltage is applied to CN1 (6P-1)? (Suitable DC voltage = approximately 5V between TP1 and 2, approximately 5V between TP3 and 4, and TP are devaction and surious doard Reverse the water heat exchanger unit's control board and surrounding are exchanger unit's control board board and surrounding are not possible exchanger unit's control board possible exchanger unit's control board and surrounding and terminate exchanger unit's control board possible exchanger unit's control possi | | 0 7 | | No | 4-1 |
| 2P-13 already in use? 2P-13 already in use? No exchanger unit's control board connectors (2P-12 → 2P-13) 4 | | | Repair the wiring properly so that no electrical voltage is | Yes | exchanger unit's control |
| Outdoor unit breakdown 5 | | 3-5 | applied. Is the water heat exchanger unit's control board 2P-13 already in use? | No | exchanger unit's control board connectors (2P-12 |
| breakdown 5 Noise 5-1 Is a source of noise located nearby? 6-1 Water heat exchange unit's control board and surrounding area 6-2 Is the varister (VA1) grounded or severely deteriorated? 6-3 Is the power switch (SW1) on? Are suitable DC voltages being applied to CN1 (6P-1)? (Suitable DC voltage = approximately 5V between TP1 and 2, approximately 7V between TP3 and 4, and Set up noise countermeasures No 6-1 Proceed to 6-2 after having confirmed that the wiring and terminals are normal around TB1 Request improvements to the power facility manager Yes (VA1) No 6-3 Proceed to 6-4 after having confirmed that the wiring is normal around SW1 No Set SW1 to ON Yes 6-8 | 1 - | | | Yes | Repair the malfunction |
| Noise 5-1 Is a source of noise located nearby? 6-2 Is the varister (VA1) grounded or severely deteriorated? 6-3 Is the power switch (SW1) on? 6-4 Are suitable DC voltages being applied to CN1 (6P-1)? (Suitable DC voltage = approximately 7V between TP3 and 4, and TP3 countermeasures No 6-1 Proceed to 6-2 after having confirmed that the wiring and terminals are normal around TB1 Request improvements to the power facility manager Yes Replace the varister (VA1) No 6-3 Proceed to 6-4 after having confirmed that the wiring is normal around SW1 No Set SW1 to ON Yes 6-8 | | 4-1 | Has the outdoor unit broken down? | No | 5-1 |
| 6 Water heat exchange unit's control board and surrounding area 6-1 Is AC200V ±10% being applied between R and S on TB1? 6-2 Is the varister (VA1) grounded or severely deteriorated? 6-3 Is the power switch (SW1) on? Are suitable DC voltages being applied to CN1 (6P-1)? (Suitable DC voltage = approximately 5V between TP1 and 2, approximately 7V between TP3 and 4, and Proceed to 6-2 after having confirmed that the wiring and terminals are normal around TB1 Request improvements to the power facility manager Proceed to 6-2 after having confirmed that the wiring and terminals are normal around TB1 Request improvements to the power facility manager Proceed to 6-4 after having confirmed that the wiring is normal around SW1 No Set SW1 to ON Yes 6-8 | | 5-1 | Is a source of noise located nearby? | Yes | |
| Water heat exchange unit's control board and surrounding area 6-1 Is AC200V ±10% being applied between R and S on TB1? 6-2 Is the varister (VA1) grounded or severely deteriorated? 6-3 Is the power switch (SW1) on? 6-4 Are suitable DC voltages being applied to CN1 (6P-1)? (Suitable DC voltage = approximately 5V between TP3 and 4, and 7es having confirmed that the wiring and terminals are normal around TB1 Request improvements to the power facility manager 7es (VA1) No 6-3 Proceed to 6-4 after having confirmed that the wiring and terminals are normal around TB1 Request improvements to the power facility manager 7es (VA1) No 6-3 Proceed to 6-4 after having confirmed that the wiring is normal around SW1 No Set SW1 to ON 7es 6-8 | | | | No | 6-1 |
| area 6-2 Is the varister (VA1) grounded or severely deteriorated? 6-3 Is the power switch (SW1) on? 1-4 Are suitable DC voltages being applied to CN1 (6P-1)? (Suitable DC voltage = approximately 5V between TP1 and 2, approximately 7V between TP3 and 4, and Testing to the power facility manager Yes Replace the varister (VA1) No 6-3 Proceed to 6-4 after having confirmed that the wiring is normal around SW1 No Set SW1 to ON Yes 6-8 | Water heat exchange unit's control board | 6-1 | Is AC200V ±10% being applied between R and S on TB1? | Yes | having confirmed that the wiring and terminals |
| 6-2 Is the varister (VA1) grounded or severely deteriorated? 6-3 Is the power switch (SW1) on? Are suitable DC voltages being applied to CN1 (6P-1)? (Suitable DC voltage = approximately 5V between TP1 and 2, approximately 7V between TP3 and 4, and TP3 and 4, | 1 | | | No | to the power facility |
| 6-3 Is the power switch (SW1) on? Are suitable DC voltages being applied to CN1 (6P-1)? (Suitable DC voltage = approximately 5V between TP1 and 2, approximately 7V between TP3 and 4, and No 6-3 Proceed to 6-4 after having confirmed that the wiring is normal around SW1 No Set SW1 to ON Yes 6-8 | | 6-2 | Is the varister (VA1) grounded or severely deteriorated? | Yes | |
| 6-3 Is the power switch (SW1) on? Yes having confirmed that the wiring is normal around SW1 No Set SW1 to ON Are suitable DC voltages being applied to CN1 (6P-1)? (Suitable DC voltage = approximately 5V between TP1 and 2, approximately 7V between TP3 and 4, and | | | , ,,, | No | 6-3 |
| Are suitable DC voltages being applied to CN1 (6P-1)? (Suitable DC voltage = approximately 5V between TP1 and 2, approximately 7V between TP3 and 4, and | | 6-3 | Is the power switch (SW1) on? | Yes | having confirmed that the wiring is normal |
| 6-4 (Suitable DC voltage = approximately 5V between TP1 and 2, approximately 7V between TP3 and 4, and | | | | No | Set SW1 to ON |
| TP1 and 2, approximately 7V between TP3 and 4, and | | 6.4 | | Yes | 6-8 |
| · · · · · · · · · · · · · · · · · · · | | 0-4 | TP1 and 2, approximately 7V between TP3 and 4, and | No | 6-5 |

| 6 Water heat | 6-5 | Is the varister (VA2) short-circuited between the phases or | Yes | Replace the varister (VA2) |
|-------------------------------|-----|--|-----|---|
| exchange unit's control board | | severely deteriorated? | No | 6-6 |
| and surrounding | | | Yes | 6-7 |
| area | 6-6 | Is electrical voltage being output to the secondary side of the fuses (F1, F2)? | No | Check that the wiring and terminals around the fuses are normal and replace the fuses |
| | 6-7 | Is electrical voltage being output to the secondary side of the noise filter (RF1?) | Yes | 6-8 |
| | | | No | Check that the wiring and terminals around RF1 are normal and replace the RF1 |
| | | Is electrical voltage being output to the secondary side of the power transformer (PT1?) | Yes | Replace the water heat exchanger unit's control board |
| | | | No | Check that the wiring and connectors around PT1 are normal and replace the PT1 |

- See "5. Reference Document" for details on the procedure for replacing the water heat exchanger unit's control board.
- For board and Electrical Wiring Diagram, see Chapter 6.
 - Outdoor main board: page VI-2
 - Outdoor power board: page VI-3
 - Converter board: VI-4
 - Indoor control board for DC motor models: page VI-5
 - Outdoor Unit Electrical Wiring Diagram: page VI-6

E07 Outdoor Unit Transmission Failure to Indoor Unit

① Error detection method

When a self-transmitted signal cannot be self-received (is mismatched) for 3 minutes, an error is determined.

- Outdoor main board is defective
- Outdoor main board terminal resistor switch setting is incorrect.

| | _ | | | |
|--------------------|-----|--|-----|---------------------------|
| 1 | | "Is the indoor/outdoor operation wiring connected to | Yes | 1-2 |
| Outdoor main board | 1-1 | multiple outdoor units? (Link wiring?) * Link wiring not available when water heat exchanger unit is connected." | No | 1-3 |
| | 1-2 | Is the S010 (terminal resistor) switch on one outdoor main board set to "ON" and the remainder to "OFF"? | Yes | 1-4 |
| | 1-2 | | No | Set only one unit to "ON" |
| | 1-3 | Is the outdoor main board S010 (terminal resistor) switch set to "OFF"? | Yes | Set to "ON" |
| | | | No | 1-4 |
| | | Indoor/outdoor operation wiring broken or short-circuited? (See "5. Reference Document") | Yes | Repair wiring |
| | | | No | 1-5 |
| | 1-5 | Replace outdoor main board | | |

- For work procedure for replacing outdoor main board, see "5. Reference Document".
- For board and Electrical Wiring Diagram, see Chapter 6.
 - Outdoor main board: page VI-2
 - Outdoor power board: page VI-3
 - Converter board: VI-4
 - Indoor control board for DC motor models: page VI-5
 - Outdoor Unit Electrical Wiring Diagram: page VI-6

E08 Duplicated Indoor Unit Address Setting

① Error detection method

An error is determined when the Indoor unit address is duplicated.

- In the remote controller detailed settings mode, the indoor address setting is duplicated.
- Several indoor units with no indoor unit address setting have the DISP pin (CN063/CN072) short-circuited.

| 1 | 1-1 | Is the water heat exchanger unit connected and link wiring | Yes | Stop using link wiring | |
|-------------------------------------|-----|---|--|-------------------------|--|
| Link wiring | 1-1 | in effect? | No | 2-1 | |
| 2 Indoor unit's control board | 2-1 | Is the DISP pin (CN063/CN072) on the indoor unit's control board short-circuited? | Yes | Eliminate short-circuit | |
| | 2-1 | | No | 2-2 | |
| | 2-2 | Reference Document.") Does E08 remain after repeating | Yes | 2-3 | |
| | | | No | 2-4 | |
| | 2-3 | The non-volatile memory (EEPROM) on the indoor board is defective → Replace | | | |
| | 2-4 | To change indoor unit address, instead of using the remote use the remote controller's address change mode. | change indoor unit address, instead of using the remote controller's advanced setting the remote controller's address change mode. | | |

- The designation (/) is used in the table to indicate indoor boards for DC and AC motor models.
- See instructions packaged with servicing indoor board for procedure on replacing indoor non-volatile memory (EEPROM).

E09 Multiple Main Remote Controller Units Set

① Error detection method

An error is determined when multiple main remote controllers exist within a remote controller group.

- Forgot to set a remote controller "sub" when controlling with two remote controllers.
- Forgot to set a remote controller "sub" when controlling with a wireless remote controller and a wired remote controller

② Troubleshooting

| 1 Remote controller | 1-1 | Set one of the two remote controllers to "Sub". | |
|---------------------------|-----|---|--|
|---------------------------|-----|---|--|

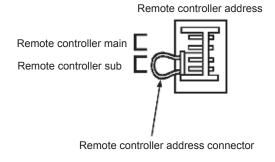
- For board and Electrical Wiring Diagram, see Chapter 6.
 - Outdoor main board: page VI-2
 - Outdoor power board: page VI-3
 - Converter board: VI-4
 - Indoor control board for DC motor models: page VI-5
 - Outdoor Unit Electrical Wiring Diagram: page VI-6
- 1-1

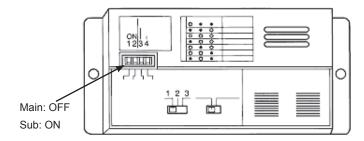
Sub remote setup procedure (E type)

- ① Hold down the Change mode and Set buttons for 4 seconds or more.
- ② "Setup", an item code " 🗓 : " and setup data " 🗓 🗓 : " appears on the remote controller LCD.
- ③ Use the ▼/▲ buttons to switch to "□□□□" setup data.
- Press the Set button (the setting is completed when flashing changes to steady light)
- ⑤ Press the Inspect button to return to normal remote controller display.

Wired remote controller (B type)

Wireless remote controller





E11 Indoor Unit Receive Failure from Signal Output Board (Cannot be detected when the water heat exchanger unit is connected.)

① Error detection method

After confirming existence of the signal output board, an error is determined upon no reception from the signal output board.

- Signal output board is defective.
- Wiring to signal output board is defective.

② Troubleshooting

| 1 Signal output | 1-1 | Wiring to signal output board (option board) broken or | Yes | Repair wiring |
|---------------------|-----|--|-----|------------------------------|
| Signal output board | 1-1 | short-circuited? | No | 1-2 |
| | 1.0 | Replace the signal output board (option board) and wiring. | Yes | Replace indoor control board |
| | 1-2 | Is E11 displayed again? | No | Replace signal output board |

• See instructions packaged with servicing indoor board for procedure on replacing indoor control board.

E12 Automatic Address Setting Is in Progress: Automatic Address Setting Start is Prohibited (Cannot be detected when the water heat exchanger unit is connected.)

① Error detection method

An error is determined when an auto-addressing startup command is received from another unit during auto-addressing.

• In a system with multiple outdoor units, with indoor/outdoor operation wiring connected (with link wiring), an auto-addressing startup command was issued by another unit during auto-addressing.

| 1 Autoaddress | 1-1 | In a system with multiple outdoor units, with indoor/outdoor operation wiring connected (with link wiring), an auto-addressing startup command was issued by another unit during auto-addressing. Wait until current auto-addressing is complete. |
|------------------|-----|--|
|------------------|-----|--|

E13 Indoor Unit Transmission Failure to Remote controller

① Error detection method

When a signal transmitted from the indoor unit (water heat exchanger unit) to the remote controller cannot be self-received, an error is determined.

- Indoor unit (water heat exchanger unit) control board is defective.
- Short-circuit or broken wires in remote controller wiring 1 (white) and 2 (black) (with indoor unit connected)

| 1 | | | Indoor unit | | 2-1 |
|-------------------------------|-----|--|-------------------------------|---------------|-----|
| Equipment check | 1-1 | What units are connected? | Water heat exchanger unit 3-1 | | 3-1 |
| 2 | 2-1 | Are remote controller wires 1 (white) or 2 (black) short-circuited or severed? | Yes | Repair Wiring | |
| Indoor unit's control board | | | No | 2-2 | |
| Control board | 2-2 | Replace the indoor unit's control board. | | | |
| 3 | 3-1 | Are remote controller wires TB5-4 or TB-5-5 short-circuited or miss-wired? | Yes | Repair Wiring | |
| Water heat | | | No | 3-2 | |
| exchange unit's control board | 3-2 | Replace the water heat exchanger unit's control board. | | | |

- See instructions packaged with servicing indoor board for procedure on replacing indoor control board.
- See "5. Reference Document" for details on the procedure for replacing the water heat exchanger unit's control board.

E15 Automatic Address Alarm (Too Few Units)

- 1) When the indoor unit is connected
 - ① Error detection method

An error is determined when the indoor unit count responding to transmission is less than the indoor unit count set on the outdoor unit. (Also detected apart from auto-addressing.)

- The actual number of indoor units is less than the number of indoor units set on the outdoor unit.
- · Connected indoor unit power is OFF
- An indoor unit has a short-circuited inspection pin (CN062/CN071) or TEST pin (CN064) upon power ON
- High voltage (AC200V, etc) was applied across indoor/outdoor operation wire circuit.

| 1 Power | 1-1 | Is the indoor unit power OFF? | Yes | Turn power ON | | |
|----------------------------|-----|--|-----|-------------------------|--|--|
| supply | 1-1 | is the indoor unit power OFF? | No | 2-1 | | |
| 2 | 2-1 | Indoor/outdoor operation wiring broken or short-circuited? | Yes | Repair wiring | | |
| Indoor/ outdoor | 2-1 | (See "5. Reference Document") | No | 2-2 | | |
| operation | 2-2 | High voltage (AC200V, etc) applied across indoor/outdoor | Yes | 3-2 | | |
| wiring | 2-2 | operation wire circuit? | No | 3-1 | | |
| 3 Indoor unit | 3-1 | Did the number of indoor units change after auto-addressing? Or, was the indoor unit count setting changed on the outdoor | Yes | 3-2 | | |
| count | | | No | 4-1 | | |
| | 3-2 | Perform pre-check before auto-addressing. (See "5. Reference | Doc | ument") | | |
| 4 | 4-1 | Is the inspection pin (CN062/CN071) or TEST pin (CN064) on the indoor control board short-circuited? | Yes | Eliminate short-circuit | | |
| Indoor | | | No | 4-2 | | |
| board | 4-2 | Is an option board (CN060) or wireless remote controller (CN041) connected to the indoor control board? | Yes | 4-3 | | |
| | | | No | 4-5 | | |
| | 4-3 | Does E15 disappear several minutes after disconnecting said connector on the indoor control board? (When controlling with two remote controllers and the wireless remote controller is the main, set the other remote controller as the main). | Yes | 4-4 | | |
| | | | No | 4-5 | | |
| | 4-4 | Replace the removed option board or wireless remote controller operating unit, wiring | | | | |
| | 4-5 | In the LED blinking on the indeed control beautiful | Yes | 4-6 | | |
| | 4-5 | Is the LED blinking on the indoor control board? | | 5-1 | | |
| | 4-6 | Nonvolatile memory (EEPROM) on the outdoor main unit is not inserted, is incorrectly inserted or is defective → Correct or replace nonvolatile memory and program it in the remote controller properties setting mode. | | | | |
| 5 Outdoor main board | 5-1 | On the outdoor main board, use setting No. 10 to set the indoor unit count. Then compare the indoor unit connection status using No. 9 (indoor unit check), and investigate the unaccounted indoor unit in detail. | | | | |

- The designation (/) is used in the table to indicate indoor boards for DC and AC motor models.
- There is no TEST pin on the indoor board for AC motor models.
- See "5. Reference Document" for checking remote controller.
- For board and Electrical Wiring Diagram, see Chapter 6.
 - Outdoor main board: page VI-2
 - Outdoor power board: page VI-3
 - · Converter board: VI-4
 - Indoor control board for DC motor models: page VI-5
 - Outdoor Unit Electrical Wiring Diagram: page VI-6
- See instructions packaged with servicing indoor board for procedure on replacing indoor non-volatile memory (EEPROM) and replacing indoor control board.
- * In systems that link wiring systems where a water heat exchanger unit is connected, the state of hot and cold water may output an Automatic Address Setting Warning.

 Should this happen, remove link wiring and set a different address.

2) When the water heat exchanger unit is connected

① Error detection method

An error may be assumed when the outdoor unit's connection setting on the indoor unit is incorrect, and when an error exists in the connected equipment or when an error exists because the power has not been switched on, etc.

(The number of indoor units connected must be set at two on the outdoor unit when a water heat exchanger unit is connected.)

- The setting for number of indoor units connected is set at three or more on the outdoor unit.
- The power to the connected water heat exchanger unit has not been switched on.
- High voltage (AC200V, etc.) has been applied to the indoor/outdoor operation wiring circuit.

| 1 | | Is the power to the water heat exchanger unit's switched | Yes | Switch on the power | | |
|--|-----|---|-----|--|--|--|
| Power supply | 1-1 | off? | No | 2-1 | | |
| 2 | 0.4 | Is the indoor/outdoor operation wiring severed or short- | Yes | Repair Wiring | | |
| Indoor/outdoor | 2-1 | circuited? | No | 2-2 | | |
| operation wiring | 2.2 | Is high voltage (AC200V, etc.) being applied to the indoor/ | Yes | 4-1 | | |
| | 2-2 | outdoor operation wiring circuits? | No | 3-1 | | |
| 3 | | Has the number of connected indoor units set with the No.10 parameter on the outdoor unit's main board been amended to a figure other than two? | Yes | 3-2 | | |
| Water heat exchanger unit | 3-1 | | No | Reset the outdoor unit's power supply | | |
| count | 3-2 | Set the number of connected indoor units to two with the No.10 parameter on the outdoor unit's main board. | | | | |
| 4 Remote controller wires | | | Yes | Replace the water heat exchanger unit's control board | | |
| (link wiring between the remote controller and the water heat exchanger unit) | 4-1 | Is the water heat exchanger unit's control board 2P-13 already in use? | No | Reverse the water heat exchanger unit's control board connectors (2P-12 → 2P-13) | | |

- See "5. Reference Document" for details on the procedure for replacing the water heat exchanger unit's control board.
- For board and Electrical Wiring Diagram, see Chapter 6.
 - Outdoor main board: page VI-2
 - Outdoor power board: page VI-3
 - Converter board: VI-4
 - Indoor control board for DC motor models: page VI-5
 - Outdoor Unit Electrical Wiring Diagram: page VI-6

E16 Automatic Address Alarm (Too Many Units)

① Error detection method

An error is determined when the indoor unit count (water heat exchanger units) responding to transmission exceeds the indoor unit count (water heat exchanger units) set on the outdoor unit. (Also detected apart from auto-addressing.)

• The actual number of indoor units exceeds the number of indoor units set on the outdoor unit (with indoor unit connected).

② Troubleshooting

1) When the indoor unit is connected

| 1 Autoaddress | 1-1 | Perform pre-check before auto-addressing. (See "5. Reference Document") |
|------------------|-----|---|
|------------------|-----|---|

2) When the water heat exchanger unit is connected

| 1 | 1-1 | Is the power to the water heat exchanger unit's switched | Yes | Switch on the power | | |
|--|-----|---|-----|--|--|--|
| Power supply | 1-1 | off? | No | 2-1 | | |
| 2 | 2-1 | Is the indoor/outdoor operation wiring severed or short- | Yes | Repair Wiring | | |
| Indoor/outdoor | 2-1 | circuited? | No | 2-2 | | |
| operation wiring | 2-2 | Is high voltage (AC200V, etc.) being applied to the indoor/ | Yes | 4-1 | | |
| | 2-2 | outdoor operation wiring circuits? | No | 3-1 | | |
| 3 | 3-1 | Has the number of connected indoor units set with the No.10 parameter on the outdoor unit's main board been amended to a figure other than two? | Yes | 3-2 | | |
| Water heat exchanger unit | | | No | Reset the outdoor unit's power supply | | |
| count | 3-2 | Set the number of connected indoor units to two with the No.10 parameter on the outdoor unit's main board. | | | | |
| 4 Remote controller wires (link wiring | | Is the water heat evolunger unit's central heard 2D 12 | Yes | Replace the water heat exchanger unit's control board | | |
| between the remote controller and the water heat exchanger unit) | | Is the water heat exchanger unit's control board 2P-13 already in use? | No | Reverse the water heat exchanger unit's control board connectors (2P-12 → 2P-13) | | |

• See "5. Reference Document" for details on the procedure for replacing the water heat exchanger unit's control board.

E18 Group Control Wiring Communication Failure (Cannot be detected when the water heat exchanger unit is connected.)

① Error detection method

When remote controller group control main unit cannot communicate with sub unit. An error is determined when the remote controller group control sub unit has not communicated with the main unit for 3 minutes.

- An indoor unit within group control is not powered ON.
- Inspection pin (CN062/CN071) or TEST pin (CN064) is short-circuited on an indoor unit within group control.
- Indoor unit DISP pin (CN063/CN072) is short-circuited on a sub indoor unit within group control.
- Remote controller group wiring is broken.
- Multiple indoor units within group control are set as "main."
- An indoor unit within group control is set as "independent."

| 1 | 1 1 | Is the indoor unit power OFF? | Yes | Turn power ON | | |
|-------------------|-----|---|--------|------------------------------|--|--|
| Indoor unit | 1-1 | | No | 1-2 | | |
| | 4.0 | Is the inspection pin (CN062/CN071) or TEST pin (CN064) or | Yes | Eliminate short-circuit | | |
| | 1-2 | DISP pin (CN063/CN072) on the indoor control board short-circuited? | No | 2-1 | | |
| 2 | 2-1 | Pomoto controllor group wiring broken? | Yes | Repair wiring | | |
| Remote controller | 2-1 | Remote controller group wiring broken? | No | 2-2 | | |
| group | 2-2 | In the remote controller detailed settings mode, check the | Yes | 2-3 | | |
| Wiring | 2-2 | group settings (item code 14). Multiple main units (1), or any independent (0) settings? | No | 3-1 | | |
| | 2-3 | Remote controller group wiring routed as intended? | | 2-4 | | |
| | | | | 2-5 | | |
| | 2-4 | Repeat auto-addressing process. | | | | |
| | 2-5 | After repairing remote controller group wiring, repeat auto-addressing process. | | | | |
| 3 | 3-1 | Is an option board (CN060) or wireless remote controller (CN041) connected to the indoor control board? | Yes | 3-2 | | |
| Indoor | | | No | 3-4 | | |
| board | 3-2 | Does E18 disappear several minutes after disconnecting said connector on the indoor control board? (When controlling with | Yes | 3-3 | | |
| | 5-2 | two remote controllers and the wireless remote controller is the main, set the other remote controller as the main). | | 3-4 | | |
| | 3-3 | Replace the removed option board or wireless remote controlle | er ope | rating unit, wiring and all. | | |
| | 3-4 | Replace indoor control board | | | | |

- The designation (/) is used in the table to indicate indoor boards for DC and AC motor models.
- There is no TEST pin on the indoor board for AC motor models.
- See "5. Reference Document" for checking remote controller.
- For board and Electrical Wiring Diagram, see Chapter 6.
 - Outdoor main board: page VI-2
 - Outdoor power board: page VI-3
 - Converter board: VI-4
 - Indoor control board for DC motor models: page VI-5
 - Outdoor Unit Electrical Wiring Diagram: page VI-6
- See instructions packaged with servicing indoor board for procedure on replacing indoor control board.

E20 No Indoor Unit in Automatic Address Setting (Cannot be detected when the water heat exchanger unit is connected.)

① Error detection method

An error is determined when an indoor unit is not recognized at auto-addressing start up or upon turning the outdoor unit power ON.

- Indoor unit address is not properly assigned.
- Indoor unit power is OFF.

| 1 Power supply, wiring | 1-1 | Indoor unit address properly assigned? | Yes | 1-2 | |
|---------------------------------|-----|--|-----|---------------|--|
| | | | No | Set address | |
| | 1-2 | Is the indoor unit power ON? | Yes | 1-3 | |
| | | | No | Turn power ON | |
| | 1-3 | ne indoor/outdoor control wire may not be connected between the indoor unit and outdo iit. Check wiring connections on indoor/outdoor control wire. | | | |

E24 Communication Failure between Outdoor Units (for only W MULTI)

① Error detection method

An Outdoor Communication Unit Failure is assumed when communications between outdoor units in the same refrigerant system are not possible for 2 minutes.

- An outdoor unit address has not been properly assigned.
- Outdoor unit power is OFF.

| 1 Power | 1-1 | Have outdoor unit addresses and outdoor unit and number of connected outdoor units been properly entered? | Yes | 1-2 | | |
|-------------------|-----|---|------|---------------------------|--|--|
| | | | No | Enter the data correctly. | | |
| supply, wiring | | Have all outdoor units in the same system been turned on? | Yes | 1-3 | | |
| | | | No | Turn power ON | | |
| | 1-3 | The indoor/outdoor operation wiring may not be connected bet outdoor unit. Check wiring connections on indoor/outdoor operation wiring. | **** | | | |

E26 Inconsistencies in Number of Outdoor Units (for only W MULTI)

① Error detection method

A Mismatch of Outdoor Unit Count is assumed when the number of outdoor units in the same refrigerant system

(No. 10 first on) does not match made setting in a W MULTI (*) system.

* A unit with an outdoor unit address (No. 10 First sub) of something other than "0" in an outdoor main board is identified as a W MULTI unit.

| S w | | | | | |
|----------------------|-----|---|-----|---------------------------|--|
| 1 | 1-1 | Is the outdoor unit a W MULTI unit? | Yes | 1-2 | |
| Check board setting | 1-1 | is the outdoor unit a wildcit unit? | No | 1-3 | |
| Setting | 1-2 | Have the system address, outdoor unit address and number of connected outdoor units for the same refrigerant system been properly entered? | Yes | 2-1 | |
| | 1-2 | System address No. 10 First out Outdoor unit address No. 10 First sub Number of connected outdoor units No. 10 First on | No | Enter the data correctly. | |
| | 1-3 | Is the outdoor unit address set to "0"? * For systems other than W MULTI, be sure to set "0." A system set to something other than "0" is recognized as W MULTI. | Yes | 3-3 | |
| | | | No | Set to "0." | |
| 2 Charle | 2-1 | Is the wiring (indoor/outdoor operation wiring) between W MULTI outdoor units in the same refrigerant system connected? | Yes | 3-1 | |
| Check wiring | | | No | Repair wiring. | |
| 3 | 3-1 | Are all W MULTI outdoor units in the same refrigerant system turned on? Is the S010 (terminal resistor) switch on the outdoor main board correctly set?* Regardless of system addresses, 1 | Yes | 3-2 | |
| Check the power | | | No | Turn power ON | |
| supply and wiring | | | Yes | 3-3 | |
| | 3-2 | outdoor unit in the same link wiring must be set to "Short" (terminal resistor "on"). | No | Enter the data correctly. | |
| | 3-3 | Replace outdoor main board | | | |
| | | | | | |

E31 Communication Failure between Units

① Error detection method

• When communications between the boards inside the outdoor unit is not possible for 30 seconds.

| 1 | 1-1 | Turn the power to the outdoor unit off and on. Does E31 | Yes | 4-3 | | |
|--------------------|------|--|----------|-------------------|--|--|
| Board check | | reoccur after one minute? | No | 1-2 | | |
| | 1-2 | operate the engine for about 6 minutes with a thair an, etc. | Yes | 2-1 | | |
| | 12 | Does E31 reoccur? | No | 3-1 | | |
| 2 | 2-1 | Is the outdoor unit grounded? | Yes | 2-2 | | |
| Ground check | | is the outdoor drift grounded: | No | Connect to ground | | |
| CHCCK | 2-2 | Is there any conduction between power control box and | Yes | 3-1 | | |
| | 2-2 | ground wire connected to outdoor unit? (Check with a tester) | No | 4-2 | | |
| 3 Error history | 3-1 | Check the error history. Has E31 occurred frequently within a | Yes | 4-3 | | |
| check | | short period of time? | No | 4-1 | | |
| 4 Recovery | 4-1 | This could be the effects of random noise. Leave the situation a observation. | as it is | and keep it under | | |
| | 4-2 | Polish the contacts with a wire brush, etc. to attain conduction between the electrical box arground wire connected to the outdoor unit. | | | | |
| | 4-3 | wires between the outdoor unit's power board connector 3P (white) CN024 and the outdoor unit's main board connector | Yes | Repair Wiring | | |
| | | | No | 4-4 | | |
| | 4-4 | Is the outdoor unit a high-power model? | Yes | 4-5 | | |
| | | | No | 4-9 | | |
| | 4-5 | Is LED: D044 on the converter assembly blinking? | Yes | 4-6 | | |
| | | | No | 4-8 | | |
| | 4-6 | Are there any poor connections, contacts, crimping or severed | Yes | Repair Wiring | | |
| | | wires between converter ASSY3P (green) CN011 and the outdoor unit's power board 3P (green) CN012? | No | 4-7 | | |
| | 4-7 | Are there any poor connections, contacts, crimping or severed wires between converter ASSY2P (red) CN016 and | Yes | Repair Wiring | | |
| | 4-7 | the outdoor unit's main board connector 2P (red) CNO20? | No | 4-6 | | |
| | 4-8 | Is DC250V or more being applied between the outdoor unit's | Yes | 4-9 | | |
| | 4-0 | power board 3P (green) CN012 1 and 3? | No | 4-10 | | |
| | 4-9 | Replace the outdoor unit's power board and keep an eye on the Replace the outdoor unit's main board if E31 occurs again. | situa | ation. | | |
| | 4-10 | Replace the converter assembly and keep an eye on the situat | ion. | | | |
| | | | | | | |

- For board and Electrical Wiring Diagram, see Chapter 6.

 - Outdoor main board: page VI-2
 Outdoor power board: page VI-3
 - Converter board: VI-4
 - Indoor control board for DC motor models: page VI-5
 - Outdoor Unit Electrical Wiring Diagram: page VI-6

F01-02-03-10-11 Indoor Unit Temperature Sensor Error

① Error detection method

An indoor unit temperature sensor error constantly detects any broken wires or short circuits, and an error is determined when error conditions are met once.

Error conditions are given below.

1) With indoor unit connected

| Display | Sensor name | Broken wire detection resistance | Short-circuit detection resistance |
|---------|--|----------------------------------|------------------------------------|
| F01 | Indoor heat exchanger inlet temperature sensor (E1) | 330kΩ or more | Less than 30Ω |
| F03 | Indoor heat exchanger outlet temperature sensor (E3) | 330kΩ or more | Less than 30Ω |
| F10 | Indoor unit intake temperature sensor | 270kΩ or more | Less than 24Ω |
| F11 | Indoor unit discharge temperature sensor | 270kΩ or more | Less than 24Ω |

2) With water heat exchanger unit connected

| Display | Sensor name | Broken wire detection resistance | Short-circuit detection resistance |
|---------|---|----------------------------------|------------------------------------|
| F01 | Water heat exchanger refrigerant inlet temperature sensor (E1) | 330kΩ or more | Less than 30Ω |
| F02 | Water heat exchanger anti-freeze sensor (E2) | 330kΩ or more | Less than 30Ω |
| F03 | Water heat exchanger refrigerant outlet temperature sensor (E3) | 330kΩ or more | Less than 30Ω |
| F10 | Hot and cold water inlet sensor | 270kΩ or more | Less than 24Ω |
| F11 | Hot and cold water outlet sensor | 270kΩ or more | Less than 24Ω |

② Troubleshooting

1) When the indoor unit is connected

| 1 Check wiring | 1-1 | Poor connection/contact/crimping or broken wire or pinched wire in sensor connector and wiring? | Yes | Repair wiring |
|-------------------------------------|-----|--|-----|--|
| | | | No | 2-1 |
| 2 Check temperature sensor | 2-1 | Disconnect the sensor connector and measure the resistance value. Is the resistance between the broken wire detection value and the short-circuit detection value? | Yes | Replace indoor (water heat exchanger unit) control board |
| | | | No | Replace temperature sensor |

- See instructions packaged with servicing indoor board for procedure on replacing indoor control board.
- For board and Electrical Wiring Diagram, see Chapter 6.
 - Outdoor main board: page VI-2
 - Outdoor power board: page VI-3
 - Converter board: VI-4
 - Indoor control board for DC motor models: page VI-5
 - Outdoor Unit Electrical Wiring Diagram: page VI-6

2) When the water heat exchanger unit is connected

| 1 Wiring 1-1 check | 4.4 | Are there any poor connections, contacts, crimping or severed wires or pinched wires in the sensor's connectors or connector wiring? | Yes | Repair Wiring |
|-------------------------------------|-----|--|-----|---|
| | 1-1 | | No | 2-1 |
| 2 Temperature sensor check | 2-1 | Disconnect the sensor's connector and measure the resistance. Is the resistance between the broken wire detection value and the short-circuit detection value? | Yes | Replace the water heat exchanger unit's control board |
| | | | No | Replace the temperature sensor |

- See "5. Reference Document" for details on the procedure for replacing the water heat exchanger unit's control board.
- For board and Electrical Wiring Diagram, see Chapter 6.
 - Outdoor main board: page VI-2
 - Outdoor power board: page VI-3
 Converter board: VI-4

 - Indoor control board for DC motor models: page VI-5
 - Outdoor Unit Electrical Wiring Diagram: page VI-6

F04·06·08·12·13·17·18/H08 Outdoor Unit Temperature Sensor Error

* H08 (temperature sensor for measuring the oil level) will only detect the oil surface with W-Multi. Re-check the settings if it is not the relevant model.

Setting confirmation method: The [No.10] – [FirSt] – [Sub] display on the outdoor unit's control board:

It is not a W-Multi if this is set at [Sub 00].

It is set for W-Multi if this is set at [Sub 01] or [Sub 02].

* The two-inlet temperature sensor for the outdoor unit's heat exchanger unit is only connected to the 3WAY. A F06 message will be issued if the outdoor unit is set as a 3WAY model but is a model other than a 3WAY model

In this event, the model setting must be checked and corrected.

Setting confirmation method: The [No.10] – [2-3] display on the outdoor unit's control board:

Set at 3WAY if set at [02].

Correct this if the outdoor unit is not actually a 3WAY model.

If the setting is correct or if F06 is still issued after the setting has been corrected, refer to (1) and (2) below and carry out a normal malfunction check.

① Error detection method

An outdoor unit temperature sensor error constantly detects any broken wires or short circuits, and an error is determined when error conditions are met once.

Error conditions are given below.

| Display | Sensor name | Severed wire detection resistance | Short-circuit detection resistance |
|---------|---|-----------------------------------|------------------------------------|
| F04 | Compressor outlet temperature sensor | (Note 1) | 130Ω or less |
| | Outdoor heat exchanger inlet temperature sensor | 400kΩ or more | 130Ω or less |
| F06 | Outdoor heat exchanger 2 inlet temperature sensor (3WAY only) | 400kΩ or more | 130Ω or less |
| F08 | Outside air temperature sensor | 400kΩ or more | 130Ω or less |
| F12 | Compressor inlet temperature sensor | 400kΩ or more | 130Ω or less |
| F13 | Coolant temperature sensor | 62kΩ or more | 22Ω or less |
| F17 | Hot water outlet temperature sensor | 400kΩ or more | 130Ω or less |
| F18 | Exhaust gas temperature sensor | (Note 2) | 130Ω or less |
| H08 | Temperature sensor for oil level measurements (W-Multi only) | 400kΩ or more | 130Ω or less |

Note 1: Detects severed wires in the compressor's outlet temperature sensor.

When the pressure is more than 1.0 MPa and the compressor's outlet temperature is less than 6°C for 3 consecutive minutes during complete combustion.

Note 2: Detects severed wires in the exhaust temperature sensor.

When the coolant temperature is $\ge 80^{\circ}$ C, the exhaust gas temperature is $\le 30^{\circ}$ C and the exhaust gas temperature does not change for 5 minutes during complete combustion.

| 1 Charle | 1 1 | Is the sensor correctly installed at the prescribed location? | Yes | 2-1 |
|------------------------------|-----|--|-----|--|
| Check installation | 1-1 | | No | Repair |
| 2 Check | 0.4 | Poor connection/contact/crimping or broken wire or pinched | Yes | Repair wiring |
| wiring | 2-1 | wire in sensor connector and wiring? | No | 3-1 |
| 3 Check temperature 3- | 3-1 | Disconnect the sensor connector and measure the resistance -1 value. Is the resistance between the broken wire detection | Yes | Replace the outdoor main board or outdoor power board. |
| sensor | | value and the short-circuit detection value? | No | Replace temperature sensor |

- For work procedure for replacing outdoor main board, see "5. Reference Document".
- For board and Electrical Wiring Diagram, see Chapter 6.
 - Outdoor main board: page VI-2
 - Outdoor power board: page VI-3
 - Converter board: VI-4
 - Indoor control board for DC motor models: page VI-5
 - Outdoor Unit Electrical Wiring Diagram: page VI-6

F16 Compressor Inlet/Outlet Pressure Sensor Error

① Error detection method

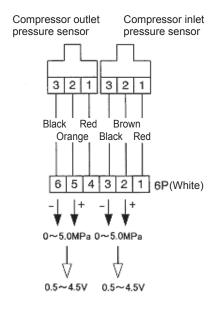
When pressure in the following chart is detected.

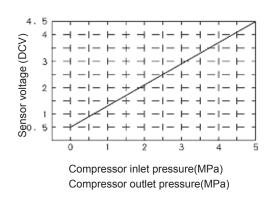
| Detect Open | Detect Short Circuit |
|-------------|----------------------|
| – 0.5MPa | 5.5MPa |
| (0V) | (4.9V) |

| 1 Check | 1-1 | Install gauge on large tube and small tube service port, and open valve (see *1 below for procedure) to equalize pressure | Yes | Operate again |
|--------------------|---|---|-------------------------|----------------------------|
| pressure sensor | 1-1 | within refrigeration circuit. Gauge display nearly identical to outdoor main board display? | No | 2-1 |
| 2 | | Is there a DC 5V voltage between the following terminals of | Yes | 2-2 |
| Check wiring | 2-1 | the outdoor main board connector 6P (red) CN049? No. 1 (+) and No. 3 (-), and No. 4 (+) and No. 6 (-) | No | Replace outdoor main board |
| | 2-2 | Is the voltage between the following terminals of the outdoor main board connector 6P (red) CN049 appropriate for the | Yes | Replace outdoor main board |
| | 2-2 | pressure? No. 2 (+) and No. 3 (-), and No. 5 (+) and No. 6 (-) | No | 2-3 |
| | 0.0 | Wiring connection/contact poor, or wire broken, between | Yes | Repair wiring |
| | outdoor main board connector 6P (red) CN049 and compressor inlet/outlet pressure sensors? | No | Replace pressure sensor | |

- For work procedure for replacing outdoor main board, see "5. Reference Document".
- For board and Electrical Wiring Diagram, see Chapter 6.
 - Outdoor main board: page VI-2
 - Outdoor power board: page VI-3
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^{*1} Perform from outdoor main board. Issue "V OPEN" command from Maintenance Panel Menu 4, then press the Set key (S005) to light the LED. The valve opens. Press again to turn off the LED, and the valve closes.





F20 Clutch Coil Temperature Sensor Error

① Error detection method

• Detected in the following situations.

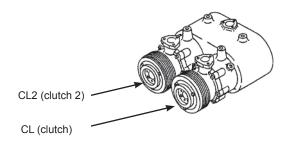
Broken wire detected: Sensor resistance exceeds $1800k\Omega$

Short circuit detected: Less than 850Ω

② Troubleshooting

| 1 Check | 1-1 | Disconnect outdoor main board connector 2P (blue) CN060 or 2P (yellow) CN064 and measure resistance between the | Yes | Replace sensor |
|------------|---|---|----------------------------|----------------|
| sensor | wires. Is it 1800 k Ω or more? | No | 1-2 | |
| | 1-2 Measure resistance between CN060 wires. Less than 850Ω? | | Yes | Replace sensor |
| | | No | Replace outdoor main board | |

• For work procedure for replacing outdoor main board, see "5. Reference Document".



F29 Indoor Nonvolatile Memory (EEPROM) Error

① Error detection method

• An error is determined when the nonvolatile memory (EEPROM) on the indoor (water heat exchanger unit) control board cannot be read or written.

| 1 Nonvolatile | | Is the nonvolatile memory on the indoor (water heat exchanger unit) control board correctly oriented in the IC socket, and | Yes | 1-2 |
|------------------|-----|--|--------|------------------------------|
| memory | | No | Repair | |
| | | | Yes | Defective EEPROM |
| | 1-2 | Replace the nonvolatile memory (provided with the servicing board). Does this eliminate the error? | No | Replace indoor control board |

- See the instruction manual supplied with the Servicing Indoor Board for details on the procedures for replacing the indoor non-volatile memory (EEPROM) and the indoor control board.
- Recover EEPROM malfunctions when connected to a water heat exchanger units by replacing the board.
- See "5. Reference Document" for details on the procedure for replacing the water heat exchanger unit's control board.
- For board and Electrical Wiring Diagram, see Chapter 6.
 - Outdoor main board: page VI-2
 - Outdoor power board: page VI-3
 - Converter board: VI-4
 - Indoor control board for DC motor models: page VI-5
 - Outdoor Unit Electrical Wiring Diagram: page VI-6

F30 Real Time Clock (RTC) Function Error

① Error detection method

• An error is determined when the standard pulse (every 1 second) from the outdoor main board clock function (RTC) cannot be read.

| 1 Clock function | 1-1 | Turn OFF the outdoor unit, then turn ON and observe. If the error recurs, replace outdoor main board |
|------------------------|-----|--|
|------------------------|-----|--|

- For work procedure for replacing outdoor main board, see "5. Reference Document".
- For board and Electrical Wiring Diagram, see Chapter 6.
 - Outdoor main board: page VI-2
 - Outdoor power board: page VI-3
 - Converter board: VI-4
 - Indoor control board for DC motor models: page VI-5
 - Outdoor Unit Electrical Wiring Diagram: page VI-6

F31 Outdoor Nonvolatile Memory (EEPROM) Error

① Error detection method

• An error is determined when the nonvolatile memory (EEPROM) on the outdoor main board cannot be written.

| 1 | 1-1 | Is the nonvolatile memory on the outdoor main board correctly | Yes | 1-2 |
|-------------|-----|--|-----|------------------------------|
| Nonvolatile | 1-1 | oriented in the IC socket, and inserted firmly? | No | Repair |
| memory | | Turn OFF the outdoor unit, then turn ON and observe. If | Yes | Defective EEPROM |
| | | the error recurs, replace nonvolatile memory (provided with service board). Does this eliminate the error? | No | Replace indoor control board |

- For a procedure on replacing non-volatile memory (EEPROM) and an outdoor main board, see "5 Reference Document."
- For board and Electrical Wiring Diagram, see Chapter 6.
 - Outdoor main board: page VI-2
 - Outdoor power board: page VI-3
 - Converter board: VI-4
 - Indoor control board for DC motor models: page VI-5
 - Outdoor Unit Electrical Wiring Diagram: page VI-6

H07 Compressor Oil Depletion Error (for only W MULTI)

① Error detection method

Each outdoor unit is inspected for lack of oil and when the oil level is 0 (insufficient) for 20 minutes, the engine stops.

- An H07 failure is assumed when the engine has stopped due to insufficient oil a total of 8 times.
- This cumulative count clears when the oil level becomes 1 (normal) or 2 (sufficient).

② Troubleshooting

| 1 Gas shut-off | 1-1 | Is the cooler being operated when the outside temperature is 5°C or less (or is there any evidence of this)? (If there | Yes | 1-2 |
|---|-----|--|------|--|
| valve check | 1-1 | is only one outdoor unit, this is "No" regardless of outside temperature.) | No | 2-1 |
| | | | Yes | 2-1 |
| | 1-2 | Is the gas shut-off valve (optional) correctly connected? | No | Connect the gas shut-off valve |
| 2 | | | Yes | 2-2 |
| Sensor | 2-1 | Is the temperature sensor for measuring the oil level correctly installed? (Must be no disconnected or floating sensors.) | No | Resecure the temperature sensor in place |
| | | Are the characteristics of the temperature sensor for | Yes | 2-3 |
| | 2-2 | measuring the oil level normal? (Temperature sensor: Check the TH11 resistance value.) | No | Replace the temperature sensor |
| | | Are the measurement results of the temperature sensor for measuring the oil level valid? * Compare the No. 26 value displayed on [No.00] on the | Yes | 3-1 |
| | 2-3 | outdoor unit's main board (temperature measurement for the oil level) with the actual temperature measured with a thermometer or other tools. | No | Replace the outdoor unit's main board |
| 3 Regular oil return circuit check | | Operate the outdoor unit and check the temperature of the regular oil return circuit. Is the temperature rising? * Check the temperature at the top of the capillary on the oil return circuit (near the temperature sensor for the oil level) directly with a thermometer or other tools, or check | Yes | 4-1 |
| | 3-1 | the fluctuations in temperature displayed for the oil level on the outdoor unit's main board. * Although results will differ in accordance with conditions, the temperature will clearly rise approximately 5 to 10 minutes after the engine has been started up under normal circumstances. | No | Replace the regular oil return circuit |
| 4 | | Is the dry coil blocked? | Yes | 5-1 |
| Dry core check | 4-1 | * Operate the heater and check the temperature differences at the dry core's inlet and outlet. | No | Replace |
| 5 Suction strainer | 5-1 | Is the suction strainer blocked? (It is especially important to check this on renewal-dedicated units.) | Yes | 6-1 |
| check | | | No | Replace |
| 6 Compressor oil replenishment | 6-1 | Replenish 4 L of compressor oil (for the entire system) and | keep | an eye on the situation. |

Note: The solenoid valve coils and the vicinity can become very hot so check operations should be performed with care.

L02 Inconsistencise in Indoor/Outdoor Unit Models (non-GHP equipment connected)

① Error detection method

- An error is detected when indoor units other than GHP models are connected.
 An error is detected when package type L series indoor units and building multi outdoor units are connected.

② Troubleshooting

| 1 | | Check the following, and remove or replace all non-GHP models. |
|-------------|-----|--|
| Indoor unit | 1-1 | Indoor unit model |
| | | Indoor control board |

• See instructions packaged with servicing indoor board for procedure on replacing indoor control board.

L03 Multiple Main Units Set for Group Control (Cannot be detected when the water heat exchanger unit is connected.)

① Error detection method

An error is determined when multiple main (master) units exist within a remote controller group control.

- When remote controller group wiring is changed after auto-addressing is complete.
- When multiple main units are set in remote controller detailed settings mode.

② Troubleshooting

| 1 Remote controller | 1-1 | Remote controller group wiring routed as intended? | Yes | 1-2 |
|---------------------------|-----|--|-------|------------|
| | | | No | 1-3 |
| group wiring | 1-2 | In remote controller detailed settings mode, set one main unit (1) in group settings (item code 14). Then, either manually set all others as sub units (2), or repeat auto-addressing. | | |
| | 1-3 | After repairing remote controller group wiring, repeat auto-addr | essin | g process. |

L04 Duplicate System (Outdoor Unit) Address Setting

① Error detection method

An error is determined when identical system (outdoor unit) addresses exist within the same link wiring.

- When the system (outdoor unit) address settings were forgotten during link wiring.
- When the system (outdoor unit) address settings were accidentally duplicated during link wiring.
- When link wiring was performed with a water heat exchanger unit connected.

| 1 System address | 1-1 | Check to ensure that unique system addresses has been set for each outdoor unit connected to the same link wiring (indoor/outdoor operation wiring). Correct any duplicate addresses that are found and perform the auto-addressing process. |
|-------------------------------|-----|--|
| 2 Link wiring forbidden | 2-1 | Link wiring is not possible when the water heat exchanger unit is connected. Disconnect the link wiring. |

L05-06 Duplicate Indoor Unit Priority Setting (Cannot be detected when the water heat exchanger unit is connected.)

① Error detection method

An error is determined when multiple indoor units have the operation mode priority setting within the same refrigeration tubing system.

- The indoor unit with the priority setting displays L05.
- The indoor units without the priority setting display L06.
- When multiple units have the operation mode priority setting, set in remote controller simple settings mode.

② Troubleshooting

| 1 Operation mode priority setting | 1-1 | Check operation mode priority (item code 04) in remote controller simple settings mode, and assign operation mode priority setting (1) to only one indoor unit. |
|---|-----|---|
|---|-----|---|

L07 Group Control Wire Present for Individual-Control Indoor Unit (Cannot be detected when the water heat exchanger unit is connected.)

① Error detection method

An error is determined when remote controller group wiring includes an indoor unit set for independent operation.

- When remote controller group wiring is set up after auto-addressing is complete.
- When group settings for an indoor unit wired into a remote controller group are changed to "Independent" in remote controller detailed settings mode.

② Troubleshooting

| 1 Remote controller group wiring | 1-1 | Remote controller group wiring routed as intended? | Yes | 1-2 |
|---|-----|--|--|-----|
| | | | No | 1-3 |
| | 1-2 | In the remote controller detailed settings mode, check the grou to Independent (0), correct it or repeat auto-addressing process | controller detailed settings mode, check the group settings (item code 14). If set at (0), correct it or repeat auto-addressing process. | |
| | 1-3 | After repairing remote controller group wiring, repeat auto-addressing process. | | |

L08 Indoor Unit Address Not Set

① Error detection method

An error is determined when the indoor unit capacity is not set.

- When the indoor unit address was not set when new non-volatile memory (EEPROM) was installed.
- When indoor unit address in the remote controller detailed settings mode is "invalid."

② Troubleshooting

| 1 Indoor unit Set address | 1-1 | Use the remote controller detailed settings mode to check indoor unit addresses (item code 13) and set an indoor unit address to replace invalid (0) ones. |
|---------------------------------|-----|--|
|---------------------------------|-----|--|

L09 Indoor Unit Capacity Not Set (Cannot be detected when the water heat exchanger unit is connected.)

① Error detection method

An error is determined when the indoor unit capacity is not set.

- When the indoor unit capacity setting was forgotten after installing a new nonvolatile memory (EEPROM).
- In the remote controller detailed settings mode, the indoor unit capacity is "invalid".

② Troubleshooting

| 1 Indoor unit capacity setting | | In the remote controller detailed settings mode, check the indoor unit capacity setting (item code 11). If set to "Invalid" (0), set the correct indoor unit capacity. |
|---|--|--|
|---|--|--|

L10 Outdoor Unit Capacity Not Set

① Error detection method

An error is determined when the outdoor capacity, coolant, generator or engine type is not set.

- When new non-volatile memory (EEPROM) is installed and the outdoor unit settings (capacity, refrigerant, generator and engine type) are not made.
- When the outdoor unit model setting is "Invalid".

② Troubleshooting

| 1 Outdoor unit model setting | 1-1 | On the outdoor main board, use menu item No. 10 to check outdoor unit capacity, refrigerant, generator and engine type and to set them up correctly. | |
|---------------------------------------|-----|--|--|
|---------------------------------------|-----|--|--|

- Display the outdoor unit model using the outdoor main board menu item No. 03.
- For information on model settings and clearing non-volatile memory (EEPROM) (memory clear) using menu item No. 10 on the outdoor main board, see "5 Reference Document."
- 1_1

After changing the model, the nonvolatile memory (EEPROM) is cleared (memory clear). Outdoor unit model display (menu item No. 03)

| | Undetermined |
|-------|---|
| 4501 | 45.0kW models (2WAY W MULTI · 3WAY MULTI) |
| 560.1 | 56.0kW models (2WAY W MULTI · 3WAY MULTI) |
| 7101 | 71.0kW models (2WAY W MULTI · 3WAY MULTI) |
| 850: | 85.0kW models (2WAY MULTI) |

L13 Indoor Unit Model Type Setting Failure

① Error detection method

Errors are determined when the types, capacity levels and models that cannot be connected have not been set.

- When the water heat exchanger unit and an indoor unit other than a water heat exchanger unit have been connected together within the same cooling system.
- When a cooling coil and an indoor unit other than a cooling coil have been connected together within the same cooling system.

Note: The term "connected together" as used above means "connected in combination" from an electrical point of view. Consequently, even if the refrigerant tubes are in a different system, they are assumed to be connected when indoor and outdoor operation wiring is linked and they share the same system address. If this combination represents "models that cannot be used in combination" as explained above, an error will be triggered.

• When the indoor unit type has been mistakenly set in the remote controller's advanced mode.

| © Houbleshooting | | | | | | | |
|------------------------------|-----|--|--|-----|--|--|--|
| 1 Indoor/ outdoor unit | 1-1 | Is the connected unit a water heat exchanger unit? | Yes | 1-2 | | | |
| | 1-1 | | No | 1-4 | | | |
| check | 1-2 | Is a unit other than a water heat exchanger unit connected to | Yes | 1-3 | | | |
| | 1-2 | the system? | No | 1-9 | | | |
| | 1-3 | An indoor unit other than a water heat exchanger unit is connected, so change it to a connectable unit. | An indoor unit other than a water heat exchanger unit is connected together. It is a model that cannot be connected, so change it to a connectable unit. | | | | |
| | 1-4 | In the compacted indeer unit a cooling coil? | Yes | 1-5 | | | |
| | 1-4 | Is the connected indoor unit a cooling coil? | No | 1-7 | | | |
| | 1-5 | Is an indoor unit other than a cooling coil connected to the system? | Yes | 1-6 | | | |
| | 1-5 | | No | 1-7 | | | |
| | 1-6 | An indoor unit other than a cooling coil is connected together. It is a model that cannot be connected, so change it to a connectable unit. | | | | | |
| | 1-7 | Check the type setting (item code 10) for the indoor unit set with the remote controller's advanced mode. Does the setting | Yes | 1-9 | | | |
| | | match up to the actual indoor unit's type? * Setting value 32: Cooling coil | No | 1-8 | | | |
| | 1-8 | Amend the type setting (item code 10) with the remote | Yes | 1-9 | | | |
| | | controller's advanced mode, and reset the power supply for the outdoor unit. Is the alarm triggered again? | No | End | | | |
| | 1-9 | There is a chance that the actual piping connections do not match up with the unit's add setting. Check the status of the indoor and outdoor unit connections, and set the addresserved with the remote controller's advanced mode if there is a problem. If no problem can be found or the problem reoccurs after being repaired, replace the circle board. | | | | | |

- For information on the remote control's advanced settings, see Chapter 5 "Reference Document."
- * When the address settings for the indoor and outdoor unit and the type settings for the indoor unit have been amended, make sure that the power supply to the outdoor unit is reset without fail. (The new configuration will be recognized during initial communications.)

L15 Defective Pairing of Indoor Units

① Error detection method

1) In the case of double-duct models

Detects defective combinations (type, capacity, group and unit count settings) in double-duct units.

② Troubleshooting

1) In the case of double-duct models

| No. | Problem | Recovery |
|-----|--|---|
| 1 | Another indoor unit is connected to the system to which a double-duct unit is connected. | Connect only one indoor unit to the system ¹ . |
| 2 | Another indoor unit is group-connected to the remote controller group in the double-duct unit. | Disconnect the other indoor unit from the group and reset the group settings (item code 14 in the remote controller's advanced settings) ² . |
| 3 | A defective setting exists in the remote control group settings between the two built-in indoor units' control boards. | Set one of the two boards to "1" (main) and the other to "2" (sub) in the group settings (item code 14 in the remote controller's advanced settings). |
| 3 | The type or capacity settings differ between the two built-in indoor units' control boards. | Set the type and capacity parameters to the same setting for both indoor unit's control boards with the remote controller's advanced settings. |
| 4 | The remote control group wiring is severed or short-circuited between the two built-in indoor units' control boards. | Repair the wiring. |
| 5 | One of the two built-in indoor units' control boards is malfunctioning. | If there is no problem with the power supply, etc., replace the board. |

^{*1} It is necessary for only one indoor unit to be connected to the outdoor unit to which a double-duct model is connected.

^{*2} A group has been established between the two indoor boards in the indoor unit, so groups cannot be set for other indoor units.

L16 Faulty Water Heat Exchanger Unit Settings

* Only detected when the water heat exchanger unit is connected. Re-check the settings if it is not the relevant model.

① Error detection method

An error is determined in accordance with the criteria shown below the first time the settings on the water heat exchanger unit's control board are incorrect.

- When the temperature during heating with SW4 and 5 is outside of the temperature setting.
- When the temperature during cooling (water) with SW1 to 3 is outside of the temperature setting.
- When the temperature during cooling (brine) with SW1 to 3 is outside of the temperature setting.
- When the setting for the anti-icing control switch with SW8-1 is incorrect.

② Troubleshooting

| 1 Set temperature check during | 1-1 | Are the settings for SW4 and SW5 between 35°C and 55°C? | Yes | 2-1 |
|--------------------------------------|--------|---|-----|--------------------------------------|
| heating | 1-1 | | No | Revise settings |
| 2 | 2-1 | Is it used as a water chiller? | Yes | 2-2 |
| Set temperature check during | 2-1 | is it used as a water crimer? | No | 3-1 |
| cooling (water) | | | Yes | 2-3 |
| | 2-2 | Is SW1-2 set at OFF? | No | Proceed to 2-3 after changing to OFF |
| | | | Yes | 2-4 |
| | 2-3 | Is SW1-3 set at OFF? | No | Proceed to 2-4 after changing to OFF |
| | | Are the settings for SW2 and SW3 between 5°C and 15°C? | Yes | 4-1 |
| | 2-4 | (If the answer is "No" for either 2-2 or 2-3, diagnostics will end even if 2-4 is "Yes.") | No | Revise settings |
| 3 | | | Yes | 2-2 |
| Set temperature check during | 3-1 | Is SW1-2 set at ON? | No | Proceed to 2-2 after changing to ON |
| cooling (brine) | 3-2 | Are the settings for SW1, SW2 and SW3 between -15°C | Yes | 4-2 |
| | 3-2 | and 15°C? (If the answer is "No" for 3-1, diagnostics will end even if 3-2 is "Yes.") | No | Revise settings |
| 4 | 4-1 | Is SW8-1 set at OFF? | OK | 5-1 |
| Anti-icing control switch | 4-1 | IS SW8-1 Set at OFF? | NG | Change to OFF |
| setting check | 4-2 | Is SW8-1 set at ON? | OK | 5-1 |
| | | | NG | Change to ON |
| 5 Miscellaneous | 5-1 sv | Momentarily reverse (switch to the opposite sides) all dip switches (SW1-2. SW1-3, SW1-8) and then try returning them to their previous positions. Has the problem been solved? | Yes | End diagnostics |
| | | | No | 5-2 |
| | | Move the position of the rotary switches (SW2 to 5) around | Yes | End diagnostics |
| | 5-2 | at random, and then try returning them to within the set range. Has the problem been solved? | No | Replace the control board |

- For details on the procedures for replacing the water heat exchanger unit's control board, see Chapter 5 "Reference Document."
- For details on board and electrical wiring diagrams, see Chapter 6.
- 1-1

Set SW4 at tens place and SW5 at ones place. The set temperature range is between +35°C and +55°C. (Example: If SW2 is set at "4" and SW3 at "5", the set temperature is "+45°C".)

• 2-4

The coolant temperature setting is performed with SW2 and SW3 (green rotary switches). Set SW2 at tens place and SW3 at ones place. The set temperature range is between +5°C and +15°C. (Example: If SW2 is set at "0" and SW3 at "7", the set temperature is "+7°C".)

• 3-2

Position 3 on SW1 (3P dip switch) selects whether the temperature is to be set at a positive value or a negative value.

| Set Temperature | SW1 Position 3 | | | |
|-----------------|--------------------------|--|--|--|
| Negative (-) | ON (knob at the top) | | | |
| Positive (+) | OFF (knob at the bottom) | | | |

Set SW2 at tens place and SW3 at ones place. The set temperature range is between -15°C and +5°C. (Example: If SW1 position 3 is set at "ON", SW at "0" and SW3 at "5", the set temperature is "-5".)

A setting between +5°C and +15°C can be set. In this event, set position 1 on SW8 (4P dip switch) to OFF (with the knob at the bottom).

L19 Duplicated Water Heat Exchanger Unit Parallel Array Addresses

* Only detected when the water heat exchanger unit is connected. Re-check the settings if it is not the relevant model.

① Error detection method

An error is determined in accordance with the criteria shown below when duplicated water heat exchanger unit parallel array addresses are detected

• When using the RS-485 line to enable the use of the remote controller (CZ-10RTGXA), multiple water heat exchanger units with the same parallel address (SW6) are connected within the same wiring array. Duplicated addresses are determined when detected for the first time. (However, duplicated addresses set at "0" are not detected.)

| 1 Number of units connected check | 1-1 | Are two or more water heat exchanger units managed by the | | 2-1 |
|--|-----|---|--|--------------------------|
| | | 100 A | No | 1-2 |
| | 1-2 | Set "0" on the water heat exchanger unit's control board (SW6) for TB5-4 or 5 on the terminal board. | on the water heat exchanger unit's control board (SW6) without any connections made -4 or 5 on the terminal board. | |
| 2 Duplicated parallel array address check | 2-1 | Eradicate the duplicated parallel array addresses on the water board (SW6) within the RS-485 wiring array. | heat e | exchanger unit's control |

- For board and Electrical Wiring Diagram, see Chapter 6.
 - Outdoor main board: page VI-2
 - Outdoor power board: page VI-3
 - Converter board: VI-4
 - Indoor control board for DC motor models: page VI-5
 - Outdoor Unit Electrical Wiring Diagram: page VI-6

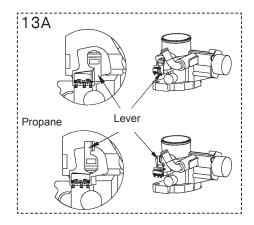
L21 Gas Type Setting Failure

① Error detection method

A Gas Type Setting Failure is assumed on the first occurrence of a mismatch between the gas type setting on the outdoor main board and the fuel change switch setting.

However, a mismatch is not detected after the gas type is confirmed.

- * The factory default gas type setting and fuel change switch setting are both "13A." Note: To use E-grade propane as the fuel gas (G-gas compatible model), the fuel flow control value and gas type need to be set.
- Setting the fuel regulating valve
 - * Leave the power breaker to the outdoor unit OFF.
 - Set the P/N switch lever attached to the engine mixer to the position shown in the illustration.
 Rotate it 180-degrees clockwise (up until the stopper.)Do not apply excessive force to rotate it further than this.
 - 2. Attach the short-circuit connector supplied to the N/P switch CN013 on the outdoor unit's control board.
 - * Switch the outdoor unit's power breaker to ON.
 - 3. Attach the <Gas type> label and <Gas type setting and adjustment completed> label inside the electrical box to the prescribed PL NAME position.



② Troubleshooting

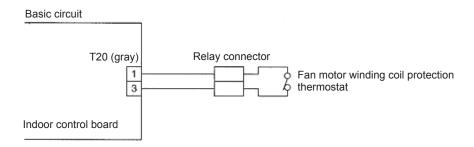
| 1 Gas | 1-1 | Does the gas type setting match the supplied gas type classification? | Yes | 1-2 |
|--------------------|--|---|--------|--|
| typesetting | | Control board menu 10 (initial settings) gas type setting | No | Change settings |
| Fuel change switch | 1-2 | Disconnect outdoor main board connector 3P (red) CN013 connector and measure conduction of the N/P change confirmation switch. | Yes | Replace outdoor main board |
| | | (Measure between 3P red No.1 and No.3). Gas type 0 : Conduction Gas type 1-5 : No conduction | No | 1-3 |
| | 1-3 | Disconnect N/P change confirmation switch relay connector 2P-13 (white), and measure conduction of the switch. (Measure between 2P white No.1 and No.2). Gas type 0 : Conduction Gas type 1-5 : No conduction | Yes | 1-4 |
| | | | No | Replace N/P change confirmation switch |
| | 1-4 Correct the wiring between the outdoor main board connector change confirmation switch. Gas type 0 : Broken wire or poor connection/contact Gas type 1-5 : Short-circuit or pinched wire | | 3P (re | d) CN013 and N/P |

• For work procedure for replacing outdoor main board, see "5. Reference Document".

P01 Indoor Fan Error/Indoor Unit Fan rpm Error (Cannot be detected when the water heat exchanger unit is connected.)

① Error detection method

- Detects when indoor control board connector T20 (gray) CN076 1-3 are open and assumes an error has occurred.
- The sensor connected to T20 (gray) CN076 may be an internal thermostat built into the fan motor, or a thermal magnet switch, depending on the model.
- The internal thermostat turns the contact OFF when the fan motor coil temperature rises, and automatically recovers as the coil temperature decreases, turning the contact ON.
- The thermal magnet switch turns the contact OFF when the fan motor operation current becomes excessive, and turns the contact ON when normal or when recovered.
- The wiring method and protective devices differ among indoor units. For details, see the electric diagram diagrams for each indoor unit.



- Models not listed below have one fan motor, with an internal thermostat contact connected between No.1 and No.3 T20 (gray) CN076.
- Models with two fan motors, with the internal thermostat contacts connected in-line between No.1 and No.3 of T20 (gray) CN076.
- If a fan stop signal comes from the indoor unit or data does not come from the indoor unit for three minutes (communication error) even though the outdoor unit forces the indoor fan to stop, a P01 warning will result.

| <u> </u> | | | | | | | | |
|-----------|-----|--|-----|------------------------------|--|--|--|--|
| 1 | 1-1 | Is there AC 200V between indoor control board connector IN | Yes | 1-4 | | | | |
| Fan motor | 1-1 | (11 - 1) ONO 7 N - 0 - 1 1 - TOO () ONO 70 N - 00 | No | 1-2 | | | | |
| | 1-2 | Any poor contact or broken wires in wiring between No.1 and No.3 of connector T20 (gray)? | Yes | Repair | | | | |
| | 1-2 | | No | 1-3 | | | | |
| | 1-3 | The fan motor winding coil protection thermostat has activated. Check for dirty filter, fan motor lock, foreign matter caught in the fan, etc. For a three-phase motor, check for missing phase. | | | | | | |
| | 1-4 | Operate again to check activation. Immediate error upon operation? | Yes | Replace indoor control board | | | | |
| | | operation? | No | 1-3 | | | | |
| | | | Yes | Repair | | | | |
| | 1-5 | Poor connection or broken wires in communication lines? | No | Replace indoor control board | | | | |

- For board and Electrical Wiring Diagram, see Chapter 6.
 - Outdoor main board: page VI-2
 - Outdoor power board: page VI-3
 - · Converter board: VI-4
 - Indoor control board for DC motor models: page VI-5
 - Outdoor Unit Electrical Wiring Diagram: page VI-6
- See instructions packaged with servicing indoor control board for procedure on replacing indoor control board.

P03 High Compressor Discharge Temperature

① Error detection method

- When the compressor discharge temperature $\geq 130^{\circ}\text{C}$ during engine operation (complete combustion), the engine is stopped and an error flag is set.
 - A Compressor Discharge Temp. High fault is assumed when this flag has shut down the engine 5 consecutive times.
- Revolution speed setting > minimum revolution speed is not included in pre-trip.
- Not included in pre-trip when liquid valve opening ≤ 400 step.

| 1 Sensor | 1-1 | Disconnect compressor outlet temperature sensor connector 2P (red) CN054 and measure resistance. Appropriate value? | Yes | 2-1 |
|-------------------------------------|-----|---|----------------------|---------------------------------|
| Serisoi | 1-1 | (See "5. Reference Document" for thermistor characteristics.) | No | Replace sensor |
| 2 Out of gas | 2-1 | Out of gas? Determine using compressor outlet pressure, compressor inlet pressure, and indoor/outdoor electric valve | Yes | Repair leak and charge gas. |
| | | opening. | No | 3-1 |
| 3 Tubing | | Any symptoms of pump down? Determine with indoor coil | | Inspect indoor unit tubing |
| | | temperature | No | Inspect outdoor unit tubing |
| 4 Inspect outdoor solenoid | | Adjust outdoor solenoid valves. Use trial operation mode to check that the solenoid valves operate normally in each operating mode (cooling/heating) and measure tube temperature around solenoid valves to assess. (For | Yes | Replace outdoor main board |
| valves (For three-way device) | 4-1 | information on solenoid valve operation in each operating | No | 4-2 |
| | | Adjust the power board. | Yes | 4-3 |
| | 4-2 | Does the power board CN013 output the solenoid power supply voltage (AC 200V)? | No | Replace power board |
| | 4-3 | Any poor connection and broken wires in wiring between the | Yes | Repair wiring |
| | 4-3 | power board and the relay board? | No | 4-4 |
| | 4-4 | Adjust the outdoor main board. In No. 4 test mode when "v_open" (valve open), is there a drive output voltage (12 V DC) from discharge valves 1-1, 1-2, discharge valve 2, suction valve 2-1 and 2-2? (9P (white) CN018) Discharge valve 1-1, 1-2: between No. 3 - 9 Discharge valve 2: | Yes | 4-5 |
| | | between No. 4-9 Suction valve 2-1, 2-2: between No. 6 - 9 Does suction valve 1 output a drive voltage (DC 12V) during cooling operation? Suction valve 1: between No. 3 - 9 * Note that suction valve 1 closes when powered (the other valves operate in the opposite way) | No | Replace outdoor main board |
| | 4-5 | Any poor connection and broken wires in wiring between the outdoor main board and the relay board? | | Repair wiring 4-6 |
| | | Adjust the relay board. In No. 4 test mode when "v_open" (valve open), is there an output voltage (AC 200V) from discharge valves 1-1, 1-2, | Yes | 4-7 |
| | 4-6 | discharge valve 2, suction valve 2-1 and 2-2? Does suction valve 1 output a voltage (AC 200V) during cooling operation? | No | Replace relay board |
| | | Adjust the solenoid valve coil. (Be sure to turn the power off before starting work.) Disconnect the connectors of discharge valve 1-1, 1-2, discharge valve 2, suction valve 1, suction valve 2-1 and 2-2 from the relay board and measure the resistance between No. | Resistance is normal | Replace solenoid valve |
| | | 1 and 3. Normal value (20°C) discharge valve 1-1, 1-2: 543 ohm discharge valve 2: 1132 ohm Suction valve 1: 1197 ohm suction valve 2-1, 2-2: 543 ohm Is the coil operating normally? | Abnormal resistance | Replace the solenoid valve coil |

- For work procedure for replacing outdoor main board, see "5. Reference Document".
 For board and Electrical Wiring Diagram, see Chapter 6.
- - Outdoor main board: page VI-2
 Outdoor power board: page VI-3
 Converter board: VI-4

 - Indoor control board for DC motor models: page VI-5
 - Outdoor Unit Electrical Wiring Diagram: page VI-6
- 1-1

| 30°C→45.0kΩ | 40°C→29.6kΩ | 50°C→20.0kΩ | 60°C→13.8kΩ |
|-------------|--------------|--------------|-------------|
| 70°C→9.7kΩ | 80°C→6.9kΩ | 90°C→5.1kΩ | 100°C→3.8kΩ |
| 110°C→2.8kΩ | 120°C→2.15kΩ | 130°C→1.66kΩ | |

P04 Refrigerant High-Pressure Switch Operation

① Error detection method

• When high pressure switch turns OFF

Setting: 4.15MPa

* Turns ON when contact is not defective (switch automatically resets)

| 1 | 1-1 | Is the outdoor unit a renewal-dedicated unit? | Yes | 1-2 |
|---------------------------|-----|---|-----|--|
| Model setting | | | No | 2-1 |
| check | 1-2 | Is the model setting correct? (Is the parameter a renewal setting?) | Yes | 2-1 |
| | 1-2 | Check to make sure the setting is [No.10FirSt]-[rEF02]. | No | Revise settings |
| 2 Operation | _ | Are operations possible? | Yes | 3-1 |
| Operation 2-1 possibility | 2-1 | | No | 3-2 |
| 3 | 3-1 | Is the high pressure switch conducting? Is there conduction in the high pressure switch side when the 63PH4P (white) CN014 connector on the outdoor unit's power board is | Yes | Refer to section P20 |
| High | 3-1 | | No | 3-2 |
| switch | 3-2 | | Yes | Replace the outdoor unit's power board |
| | | | No | Replace the high pressure switch |

- For board and Electrical Wiring Diagram, see Chapter 6.
 - Outdoor main board: page VI-2
 - Outdoor power board: page VI-3
 - Converter board: VI-4
 - Indoor control board for DC motor models: page VI-5
 - Outdoor Unit Electrical Wiring Diagram: page VI-6 *Reference (Electrical Wiring Diagram A-B-3)

P05 Power Source Error

① Error detection method

An error is determined when the power source status meets the following condition.

- · Open phase
- Instant power failure exceeding 100ms (5 times/h)

| | 1-5 | There may have been multiple momentary power failures. Check the power supply wiring connections (for poor contacts) an eye on the situation. | , and i | d if no error is found, keep | |
|--------|-----|---|---------|--|--|
| | | Is the alarm triggered again? | No | 1-5 | |
| | 1-4 | Furn the power off and then on again and check for eoccurrence. | Yes | Replace the outdoor unit's power board | |
| | 1-3 | Check for faulty connections and defective parts in the power supply wiring between the terminal board and filter board \rightarrow Repair | | | |
| | 1-2 | Is the power supply voltage applied to all of the board-in connectors (CN005 to CN007) on the filter board AC 200? | No | 1-3 | |
| supply | 1-2 | Is the power supply voltage applied to all of the board-in | Yes | 1-4 | |
| Power | 1-1 | (Measure between terminal boards R-S, S-T and T-R.) | No | Check power supply | |
| 1 | 1-1 | Are all power supply voltages AC 200 V? | Yes | 1-2 | |

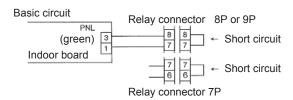
- For board and Electrical Wiring Diagram, see Chapter 6.

 - Outdoor main board: page VI-2Outdoor power board: page VI-3
 - Converter board: VI-4
 - Indoor control board for DC motor models: page VI-5
 - Outdoor Unit Electrical Wiring Diagram: page VI-6 *Reference (Electrical Wiring Diagram B-F-1-2)

P09 Indoor Unit Ceiling Panel Connector Connection Failure (Cannot be detected when the water heat exchanger unit is connected.)

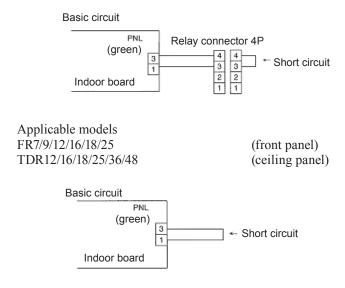
① Error detection method

- Detects when indoor control board connector PNL (3P green) CN080 1 and 3 are open, and determines an error.
- The wiring method and connectors differ among indoor units. For details, see the electric wiring diagrams for each indoor unit.
- This input short-circuits on the following models when a ceiling panel or front panel connector is connected, thus detecting a panel connection.



Applicable models
S-22/28/36/45/56/73ML
8P (ceiling panel)
S-28/36/45/56/73MD
7P (ceiling panel)
S-22/28/36/45/56/73/106/140/160MU
7P (ceiling panel)
S-22/28/36/45/56MY

• The following models short-circuit this input upon shipping, to prevent this error.



Applicable models All indoor units not listed above

② Troubleshooting

| 1 | 1-1 | Is a ceiling panel connection relay connector 7P (red) or 8P (red) or 9P (red) connected? Or, is a short-circuiting connector 4P (white) connected? | Yes | 1-2 |
|---|-----|---|-----|------------------------------|
| | | | No | Connect |
| | 1-2 | Disconnect the indoor board connector PNL (green) CN080. Conduction between No.1 and No.3 in socket? | Yes | Replace indoor control board |
| | | | No | 1-3 |
| | 1-3 | Poor connection between connector PNL (green) CN080 and connection/broken wire between connector PNL (green) CN08 → Repair | _ | |

• See instructions packaged with servicing indoor board for procedure on replacing indoor control board.

P10 Indoor Unit Float Switch Operation (Cannot be detected when the water heat exchanger unit is connected.)

① Error detection method

- Detects when indoor control board connector FS (red) CN034/CN030 1-3 are open, and determines an error.
- The sensor connected between No.1 and No.3 of connector FS (red) CN034/CN030 is normally a drain float switch. However, some models do not have a drain float switch. These models have No.1 and No.3 of connector FS (red) CN034/CN030 short-circuited with a wire.
- The drain float switch turns the contact OFF when the drain water overflows, and the contact turns ON when the water level falls.
- The connection method and protective devices differ among indoor units. For details, see the electric circuit diagrams for each indoor unit.
- · Models with built-in drain float switch

S-22/28/36/45/56/73ML

S-28/36/45/56/73MD

S-22/28/36/45/56/73/106/140/160MU

S-22/28/36/45/56MY

S-73/106/140/224/280ME

S-22/28/36/45/56/60/73/90/106/140/160MF

S-22/28/36/45/56MM

 Models shipped with connector FS (red) CN034/CN030 No.1 and No.3 short-circuited with a wire Models not listed above

| | 1-10 | Check draining of drain hose/tubes and repair as necessary (clean or replace filter for UH) | | | | | |
|---|------|--|-----|------------------------------|--|--|--|
| | 1-9 | Repair any poor connections, broken wires, etc. in the drain flo between No. 1 and No. 3 indoor control board connectors FS (| | | | | |
| | 1-8 | check. | No | Replace drain float switch | | | |
| | | Conduction in drain float switch? Unplug connector and | Yes | 1-9 | | | |
| | 1-7 | Check for poor contact or broken wire in Indoor control board connector DP (blue) CN068 wiring → Repair | | | | | |
| | 1-0 | (blue) CN068 No. 1-No. 3? | No | Replace indoor control board | | | |
| | 1-6 | Is AC200V applied to drain pump? Is AC200V applied across indoor control board connector DP | Yes | 1-7 | | | |
| | | | No | 1-6 | | | |
| | 1-5 | Drain pump operating? | Yes | Replace drain pump | | | |
| | 1-4 | | No | 1-5 | | | |
| | 4.4 | Danier automate an anatica an | Yes | 1-10 | | | |
| | 1-3 | Drain water overflowed? | No | 1-8 | | | |
| | 4.5 | | Yes | 1-4 | | | |
| | 1-2 | Check for poor contact or broken wire in Indoor control board connector FS (red) CN034/ CN030 1-3 wiring (connector) → Repair | | | | | |
| | 1-1 | | No | 1-2 | | | |
| 1 | 1-1 | Model with drain float switch built in? | Yes | 1-3 | | | |

- The designation (/) is used in the table to indicate indoor boards for DC and AC motor models.
- For board and Electrical Wiring Diagram, see Chapter 6.
 - Outdoor main board: page VI-2
 - Outdoor power board: page VI-3
 - Converter board: VI-4
 - Indoor control board for DC motor models: page VI-5
 - Outdoor Unit Electrical Wiring Diagram: page VI-6
- See instructions packaged with servicing indoor board for procedure on replacing indoor control board.

P11 Water Heat Exchanger Unit Anti-icing Sensor Error (for only water heat exchanger unit)

① Error detection method

An error is detected as follows:

- When anti-freeze temperature is detected, and recovery temperature is not reached within 3 minutes.
- * Anti-freeze temperatures (When any one of the following conditions is reached.)

| | Water chiller |
|---------------------------------------|----------------|
| Hot and cold water outlet temperature | Less than +2°C |
| Anti-freeze temperature | Less than +2°C |
| | Less than 0°C |

* Recovery temperature (when all conditions below are met)

| | Water chiller |
|---------------------------------------|---------------|
| Hot and cold water outlet temperature | +4°C or more |
| Anti-freeze temperature | +4°C or more |

② Troubleshooting

| 1 Water heat | 1-1 | Has the water chiller parameter been set despite the fact that the unit is a brine chiller? (Proceed to 1-2 if it is being used as | Yes | Switch the power off and repair |
|-----------------|-----|--|-----|---|
| exchanger | | a water chiller.) | No | 1-2 |
| unit check | 1-2 | Is the cold/hot water pump shut down? | Yes | Switch on the cold/hot water pump |
| | | | No | 1-3 |
| | | Is the flow volume insufficient? Have the sensors installed properly in the correct positions? | Yes | Maintain the correct flow volume |
| | | | No | 1-4 |
| | | | Yes | Replace the water heat exchanger unit's control board |
| | | | No | Repair |

• For details on procedure to replace the water heat exchanger unit control board, see the instructions supplied with the service water heat exchanger control board.

P12 Indoor DC Fan Error (DC fan motor model only)

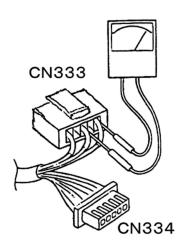
① Error detection method

• Open circuits and short-circuits in the indoor control board connector CN333 (red) and CN334 (red) on the motor side are detected and assessed as faults.

| 1 | 1-1 | Any poor connections or broken wires in indoor control board connector CN333 (red) and CN334 (red)? | Yes | Repair |
|-----------|-----|---|-----|------------------------|
| Fan motor | 1-1 | | No | 1-2 |
| | 1-2 | Disconnect indoor control board connectors CN333 (red) and CN334 (red). Turn the fan by hand to check if it turns | Yes | 1-3 |
| | 1 2 | smoothly? | No | Replace the fan motor. |
| | 1-3 | Check if the resistance between No. 1-2, 2-3 and 3-1 on the motor side of indoor control board connectors CN333 (red) is correct? 28 - 90 model: about 70 - 100 Ω 112 - 160 model: about 35 - 50 Ω Any ground faults between the cabinet and No. 1, 2 and 3?10 M Ω or more | Yes | 1-4 |
| | 1-3 | | No | Replace the fan motor. |
| | 1-4 | Connect CN333 (red) and CN334 (red), turn on the power and use a tester to measure the voltages between indoor control board connector CN334 (red) No. 2-3, No. 2-4 and No. 2-5. Is the pin voltage between 0 and 5 V when the fan is slowly | Yes | 1-5 |
| | | | No | Replace the fan motor. |
| | | | Yes | 1-6 |
| | 1-0 | | No | Replace the fan motor. |
| | 1-6 | Check the indoor control board and replace if defective. | | |

- For board and Electrical Wiring Diagram, see Chapter 6.
 - Outdoor main board: page VI-2
 - Outdoor power board: page VI-3
 Converter board: VI-4

 - Indoor control board for DC motor models: page VI-5
 - Outdoor Unit Electrical Wiring Diagram: page VI-6
- See instructions packaged with servicing indoor board for procedure on replacing indoor control board.
- 1-3, 1-4



P13 Refrigerant circuit Error (W MULTI) *Please note that 3WAY models use a different troubleshooting procedure.

① Error detection method

- The indoor unit outputs this warning when it determines that a compressor inspection is required.
- The system stops and there is no automatic reset when this warning is output.

 When there is no difference between compressor outlet and inlet pressure (≤0.2 MPa *) 3 minutes after the engine was turned on, the engine stops and an error flag is set. An Cooling Circuit Fault is assumed when the error flag has stopped the engine 5 consecutive times in 1 hour.
 - * This indicates that the difference in initial pressure and after 3 minutes is 0.2 Mpa or less.

| 1 | 1-1 | Turn off the outdoor unit (be sure to do this before work) | | |
|---|-----|--|-----|-------------------------|
| Inspect the | 4.0 | Use the instructions in A25 Clutch Trouble to adjust the | Yes | 2-1 |
| compressor. | 1-2 | compressor lock. Does it lock? (Adjust both clutch 1 and 2.) | No | 1-3 |
| | 1-3 | Use the instructions in P26 Clutch Connection Fault, to adjust | Yes | See section on page 26. |
| | 1-3 | operation and wiring of clutch 1 and 2. Any problems? | No | Keep under observation |
| 2 Replace compressor | 2-1 | Replace a compressor that is locked. Measure the amount of chiller oil in the compressor when it is removed. Fill the new compressor with an equal amount of chiller oil (new oil) before attaching it to the outdoor unit. | Yes | 3-1 |
| Clean the cooling tubes. (Cleaning using liquid normally handled by a device) | 3-1 | Use our "Replacement material" as a guide to cleaning the system using liquids that are normally present in the system. | No | Process completed |

P13 Refrigerant Circuit Error (3WAY)

① Error detection method

- The indoor unit outputs this warning when it determines that a compressor, outdoor solenoid valves, system refrigerant should be inspected.
- For detailed inspection procedure, see P13 Refrigerant Circuit Fault (W MULTI).
- The system stops and there is no automatic reset when this warning is output.

| 1 Pressure sensor inspection | 1-1 | For adjustment of the pressure sensor, see (adjustment procedure section F16). | ОК | 2-1 | | |
|---------------------------------------|-----|---|---------------------------|---|---------|--|
| | | | NG | Repair | | |
| Inspect system refrigerant | 2-1 | Use the No. 4 test mode "v_open" (valve open) to equalize the pressure to assess whether amount of refrigerant is extremely low when it is lower in pressure than saturated pressure at ambient temperature. (Assessed as out of gas when extremely low) Out of refrigerant gas? | Yes | Check for refrigerant leaks and repair. | | |
| | | | No | 3-1 | | |
| 3 | 3-1 | Turn off the outdoor unit (be sure to do this before work) | | | | |
| Inspect the compressor. | 3-2 | Use the instructions in P26 Clutch Connection Fault, to adjust | Yes | 4-1 | | |
| | | operation and wiring of clutch 1 and 2. Any problems? | No | 7-1 | | |
| Inspect refrigerant | 4-1 | Replace the compressor and check the refrigerant oil in the replaced compressor for contamination. | Not contaminated 5-1 | | 5-1 | |
| oil. | | | Contaminated 6- | | 6-1 | |
| 5 Replace compressor (1) | 5-1 | After replacing the compressor, perform a trial operation and c completed if OK. | heck the equipment. Check | | | |
| 6 Replace compressor (2) | 6-1 | Perform a flashing cleaning to clean the inside of the refrigerar | it tube | es. | | |
| 7 Inspect outdoor solenoid | 7-1 | tube temperature around solenoid valves to assess. (For information on solenoid valve operation in each operating mode, see the sections Control functions - Operating control | Yes | Replace outdoor main board | | |
| valves | | | No | 7-2 | | |
| | 7-2 | Adjust the power board. Does the power board CN013 output the solenoid power supply voltage (AC 200V)? | Yes | 7-3 | | |
| | 7-3 | Any poor connection and broken wires in wiring between the power board and the relay board? | Yes | Repair wiring | | |
| | | | No | 7-4 | | |
| | 7-4 | Adjust the outdoor main board. In No. 4 test mode when "v_open" (valve open), is there a drive output voltage (DC 12V) from discharge valves 1-1, 1-2, discharge valve 2, suction valve 2-1 and 2-2? (9P (white) CN018) | Yes | 7-5 | | |
| | | Discharge valve 1-1, 1-2: between No. 3 - 9 Discharge valve 2: between No. 4-9 Suction valve 2-1, 2-2: between No. 6 - 9 Does suction valve 1 output a drive voltage (DC 12V) during cooling operation? Suction valve 1: between No. 3 - 9 * Note that suction valve 1 closes when powered (the other valves operate in the opposite way) | No | Replace outdo board | or main | |

| | 7-5 | Any poor connection and broken wires in wiring between the outdoor main board and the relay board? | Yes | Repair wiring | |
|--|-----|---|---------------------|---------------------|--|
| | | | No | 7-6 | |
| | 7-6 | Adjust the relay board. In No. 4 test mode when "v_open" (valve open), is there an output voltage (AC 200V) from discharge valves 1-1, 1-2, | Yes | 7-7 | |
| | | discharge valve 2, suction valve 2-1 and 2-2? Does suction valve 1 output a voltage (AC 200V) during cooling operation? | No | Replace relay board | |
| | 7-7 | Adjust the solenoid valve coil. (Be sure to turn the power off before starting work.) Disconnect the connectors of discharge valve 1-1, 1-2, discharge valve 2, suction valve 1, suction valve 2-1 and 2-2 from the relay board and measure the resistance between No. 1 and 3. Normal value (20°C) discharge valve 1-1, 1-2: 543 Ω discharge valve 2: 1132 Ω Suction valve 1: 1197 Ω suction valve 2-1, 2-2: 543 Ω Is the coil operating normally? | normal solen | | Replace solenoid valve |
| | | | Abnormal resistance | | Replace the solenoid valve coil |

P15 Complete Refrigerant Gas Depletion

① Error detection method

- Engine startup is delayed when compressor inlet pressure ≤0.1 Mpa. A delay that lasts 10 minutes is counted as a fault.
- During engine operation (complete combustion) when (compressor inlet pressure ≤ 0.1 MPa) or (outdoor heat exchanger outlet temperature saturation temperature) ≥ 30deg) *1 continues for 3 minutes, the engine is stopped and an error flag is set. A Refrigerant Gas Completely Absent fault is assumed when this flag has shut down the engine 5 consecutive times.
- *1 Only during cooling (heat exchange outlet temperature is the outdoor heat exchanger outlet during cooling)
- Not detected for 7 minutes from complete combustion. If the compressor inlet pressure ≤ 0.01 MPa for a 3 minute interval, an error will be detected even within seven minutes of complete combustion.

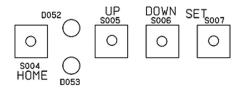
② Troubleshooting

| 1 Check pressure sensor | 1-1 | Install a gauge on a large tube and small tube service port, open the valve (open valve using outdoor main board No. 4 trial operation forced setting) to equalize pressure in the refrigerant circuit. The values on the outdoor main board display and the gauge should be roughly identical. Is it 0.1 MPa or less? | Yes | 3-1 |
|--|-----|--|-----|-----------------------------|
| | | | No | 2-1 |
| 2 Check wiring | 2-1 | Check compressor inlet pressure sensor wiring. OK? | Yes | Replace pressure sensor |
| | | | No | Repair wiring |
| 3 Check compressor relief valve | 3-1 | Check the compressor relief valve. Are there any leaks or signs of leaks? | Yes | Repair leak and charge gas. |
| | | | No | 3-2 |
| | 3-2 | Is the tubing clogged? | Yes | Unclog tubing Charge gas. |
| | | | No | 3-3 |
| | | Are there any other places with leakage? | Yes | Repair leak and charge gas. |
| | | | No | Replace compressor |

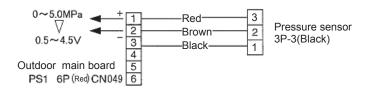
- For board and Electrical Wiring Diagram, see Chapter 6.
 - Outdoor main board: page VI-2
 - Outdoor power board: page VI-3
 - Converter board: VI-4
 - Indoor control board for DC motor models: page VI-5
 - Outdoor Unit Electrical Wiring Diagram: page VI-6

1-1

Use outdoor main board menu item No. 04 to open valve using trial operation/forced settings. Press the SET key, the LED lights as the valve opens. Press the key again to turn off the TEST/WARNING LED and close the valve.



• 2-1



P18 Bypass Valve Error

① Error detection method

- A warning is output if it is determined that the outdoor unit needs a bypass valve inspection.
- In practical terms, what happens is that each time there is a small difference ($\triangle P \le 0.1$ MPa) between the high and low pressure ($\triangle P$ = high pressure low pressure) 90 seconds after stopping the engine stops, a suspected error counter increments, and the data is recorded as "pre-trip" warning history data. After the counter reaches 5, a warning is output on the next complete combustion startup.

② Understanding the warning history

The latest P18 data in the warning history is issued immediately after a complete combustion startup. It is not the data used for detecting the error. If a pre-trip error was detected (when the suspected error counter reaches 5), that data is the next more recent P18 data.

3 Troubleshooting

| 1 Bypass valve inspection | 1-1 | Bypass valve inspection ① During operation, use the No. 4 test mode "v_close" (close valve) to close the bypass valve (step 0). Check whether refrigerant is not leaking on entering the bypass. | ок | 1-2 |
|------------------------------------|-----|---|-----|--|
| | | | NG | Replace the bypass valve unit |
| | 1-2 | Bypass valve inspection ② After completing the above inspections, stop the engine and use No.4 test mode "v_open" (open valve) to open the bypass to check that the bypass valve operates normally despite the fluctuations in tube temperature around the bypass valve. | ок | 2-1 |
| | | | NG | 1-3 |
| | 1-3 | Outdoor main board inspection Is there approximately 12 V of pressure at bypass valve output ports 5 (+) and 1 to 4 (-) when the power is on? | Yes | 1-4 |
| | | | No | Replace outdoor main board |
| | 1 1 | \bullet Electric valve coil inspection Are the resistance values for electric valve connectors 5 and 1 to 4 about 40 $\Omega?$ | Yes | Replace the bypass valve unit |
| | 1-4 | | No | Replace the bypass valve coil |
| 2 | 2-1 | Is the outdoor unit a 3-WAY MULTI-device? | Yes | 2-3 |
| Four-way valve | 2-1 | is the outdoor drift a 3-VVAT WOLTI-device: | No | 2-2 |
| Inspect | | | OK | 3-1 |
| outdoor solenoid | 2-2 | Is the four-way valve free from leakage? | NG | Replace the four-way valve |
| valves | | Are the outdoor solenoid valves (discharge valves 1 and 2, | ОК | 3-1 |
| | 2-3 | and suction valves 1 and 2) free from leakage? * Suction valve 1 closes when current flows through it (other solenoid valve remain open) | NG | Replace the solenoid valve. |
| 3 | | Liquid valve inspection ① | ОК | 4-1 |
| Liquid valve inspection | 3-1 | Any refrigerant leaks past the liquid valve when the liquid valve is completely closed (step 0)? | NG | Replace the liquid valve unit |
| 4 Expansion | 4-1 | Is the operation mode heating? * Note: If you are operating with a 3WAY MULTI, try 4-2 and 4-3 before shutting down the engine as this might be due to cooling and heating mixed operation. | Yes | 4-2 |
| valve inspection | | | No | 4-3 |
| | 4-2 | Outdoor expansion valve inspection Check that there are no refrigerant leaks past the outdoor expansion valve when the engine is stopped in heating mode. | OK | 5-1 |
| | | | NG | Replace the outdoor expansion valve unit |
| | 4-3 | • Indoor electric valve inspection Stop the indoor unit during cooling operation (multiple indoor unit operation, indoor electric valve opening = 20 steps) and check to make sure there is no coolant leakage beyond the indoor electric valve. | ОК | 5-1 |
| | | | NG | Replace indoor electric valve unit |
| 5 Pressure | 5-1 | Pressure sensor inspection (refer to the section on F16 for the | ок | Replace outdoor main board |
| sensor inspection | | inspection procedure) | NG | Repair |

• For work procedure for replacing outdoor main board, see "5. Reference Document".

P19 Four-way Valve Lock Error (not detected 3WAY MULTI)

① Error detection method

- Determined after 6 minutes of complete combustion time has passed during heating operation.
- An error is determined in thermostat ON indoor units, when the highest indoor heat exchanger outlet (E3) temperature is detected to be lower than the outdoor heat exchanger inlet for 5 minutes continuously.
- (W MULTI only) Handled as a fault only when four-way valve control (performed at first startup following a power supply reset or heating/cooling switch) fails.
- (W MULTI only) when a pressure differential fault (the high pressure of an outdoor unit working at full combustion in proximity with an another outdoor unit working at low pressure) detected between W MULTI outdoor units is assessed as a fault.

② Troubleshooting (common)

| 1 Check four- way valve | 1-1 | Check the 4 way valve temperature during heater operation. Switched to heater side? | Yes | 2-1 | |
|-------------------------------|-----|---|-----|-----|--|
| | | | No | 1-2 | |
| | 1-2 | During heater operation, is the control board VRR connector (CN033) voltage about AC0V? | Yes | 2-2 | |
| | | | No | 1-3 | |
| | 1-3 | "After stopped, turn OFF outdoor unit. Disconnect control board VRR connector (CN033) and measure wiring resistance. (Normal value: about $1k\Omega$) Short-circuited or broken wire?" | Yes | 2-3 | |
| | | | No | 2-4 | |
| 2 Actions | 2-1 | Check wiring and thermistor for indoor units with no temperature increase. (Any broken wires or short-circuits?) | | | |
| | 2-2 | Replace power board. | | | |
| | 2-3 | Replace four-way valve coil and wiring | | | |
| | 2-4 | Replace 4 way valve. | | | |

- For board and Electrical Wiring Diagram, see Chapter 6.
 - Outdoor main board: page VI-2
 - Outdoor power board: page VI-3
 - Converter board: VI-4
 - Indoor control board for DC motor models: page VI-5
 - Outdoor Unit Electrical Wiring Diagram: page VI-6

③ Troubleshooting (W MULTI only)

| 1 Pressure sensor inspection | 1-1 | (Check all W MULTI outdoor units) Is the actual difference between compressor inlet pressure displayed on the outdoor main board and output pressure (gauge data, etc.) 0.1 MPa or less? | Yes | 2-1 |
|---|-----|---|-----|-------------------------|
| | | | No | Replace pressure sensor |
| 2 Check outdoor unit operation | 2-1 | Use a collective stop setting to temporarily stop the outdoor unit and perform four-way valve adjustment control according to one of the procedures described below. After resetting the power supply on all W MULTI outdoor units, use the remote controller or the outdoor main board to start desired mode. Use the trial operation setting from the outdoor main board or the remote controller to switch between cooling and heating to start operation. | 2-2 | |
| | 2-2 | Do all the W MULTI outdoor units start and continue running for 5 minutes? | Yes | 2-4 |
| | | | No | 2-3 |
| | 2-3 | Check why operation does not continue and remedy the problem. When the device stops immediately after startup → Check error history and use the code to find troubleshooting information. When the system does not start up → IV - 1 (3) see section on engine start standby | 2-1 | |
| | 2-4 | Use a different mode (cooling or heating) to restart from 1-1. If no error is found, keep under observation. | | |

P20 Refrigerant High-Pressure Error

① Error detection method

- When the high pressure sensor value ≥ 3.75 MPa during engine operation, the engine stops and an error flag is set. A Refrigerant Pressure Too High fault is assumed when this flag has stopped the engine 5 consecutive times in 1 hour.
- When revolution speed setting is more than minimum revolution speed and fan frequency is less than 50% of maximum frequency, an error is not generated. (The engine stops momentarily.)

| 1 Cooling/ | 1-1 | Operating in the cooling mode or heating mode? | Cooling | 2-1 | |
|------------------------------------|------------|---|--|---|--|
| heating mode | 1-1 | Operating in the cooling mode of heating mode: | Heating | 3-1 | |
| 2 | 2-1 | Is the heat exchanger clogged by foreign matter or other | Yes | Remove | |
| Outdoor | 2-1 | debris (visual inspection)? | No | 2-2 | |
| unit's heat exchanger check | 2-2 | Is there an air shortage? | Yes | Revise installation | |
| | | | No | 2-3 | |
| | | | Yes | 12-1 | |
| | 2-3 | Is the fan on the outdoor unit operating? | No | Refer to section P22 | |
| 3 Tubing | 3-1 | Are there any crushed tubes, torn strainers, closed servicing valves, or other problems? Check the temperature of the | Yes | Repair | |
| | | indoor unit's coil. | No | 4-1 | |
| 4 Unit check | | Which is connected, an indoor unit or a water heat exchanger | | 5-1 when the s connected | |
| | 4-1 | unit? | Proceed to 8-1 when the water heat exchanger unit is connected | | |
| 5 | 5-1 5-2 | | Yes | Clean the filter | |
| Indoor unit's heat exchanger | | Is the air filter on the indoor unit clogged? | No | 5-2 | |
| | | le the fee on the independent on earlier of | Yes | 6-1 | |
| check | | Is the fan on the indoor unit operating? | No | Repair | |
| 6 | 6-1 | Check the indoor unit's motor-operated valve. Does the valve | Yes | 7-1 | |
| Indoor unit's motor- | | open? (Check the indoor unit's heat exchanger temperature when in the heating mode.) | No | 6-2 | |
| operated valve check | 6-2 | Check the indoor unit's control board. (Is there any voltage | Yes | 6-3 | |
| valve check | | between No. 5 (+) and No. 1-4 (-) of the indoor unit's control board PMV6P (white) CN082 when the power is switched on?) | No | Replace the indoor unit's control board | |
| | 6-3 | Check the motor-operated valve coil. (Does a resistance of approximately 46 Ω exist between No. 5 and No. 1-4 of the | Yes | Replace the valve | |
| | 0-3 | motor-operated valve connector 5P (white)* or 6P (white)?) | No | Replace the valve coil | |
| 7 | | Are indoor unit's coil sensors E1, E2, and E3 disconnected | Yes | Repair | |
| Indoor unit's coil sensor | 7-1 | from their measurement points? Check this by displaying the indoor coil temperature on the outdoor unit. | No | 11-1 | |
| 8 Cold/hot | 8-1 | Is a correct cold/hot water (brine) flow volume being maintained? | Yes | Maintain the rated flow volume | |
| water check | | mantaneu : | No | 8-2 | |
| | 8 2 | Is the cold/hot water (brine) pump operating? | Yes | 9-1 | |
| | 8-2 | is the columbt water (brille) pullip operating: | No | Repair | |

| 9 | | Check the motor-operated valve on the water heat exchanger | Yes | 10-1 |
|---|------|---|-----|---|
| Water heat | 9-1 | unit. Does the valve open? (Check the temperature of the water heat exchanger unit's coil in the heating mode.) | No | 9-2 |
| exchanger unit's motor- | | · · · · · · · · · · · · · · · · · · · | Yes | 9-3 |
| operated valve check | 9-2 | Check the water heat exchanger unit's control board. (Is there any voltage between No. 5 (+) and No. 1-4 (-) and between No. 10 (+) and No. 6-9 (-) of the water heat exchanger unit's control board 10P-1 (white) and 10P-2 (black) when the power is switched on?) | No | Replace the water heat exchanger unit's control board |
| | 9-3 | Check the motor-operated valve. (Does a resistance of | Yes | Replace the valve |
| | 9-3 | approximately 46 Ω exist between No. 5 and 1-4 of the motor-operated valve connector 6P-1 (white)?) | No | Replace the valve coil |
| 10 Water heat exchanger | 10-1 | Are coil sensors TH1 to 3 on the water heat exchanger unit disconnected from the measurement points? Check this by | Yes | Repair |
| unit's coil sensor | | displaying the temperature of the water heat exchanger unit's coil on the outdoor unit. | No | 11-1 |
| 11 Outdoor unit's motor- | 11-1 | Check the outdoor unit's motor-operated valve. Coil resistance: 46 Ω (between No. 5 (+) and No. 1 to 4 (-)), | ОК | 12-1 |
| operated valve check | | 32 Ω for 3WAY | NG | Replace |
| 12 | | | ОК | 13-1 |
| High pressure sensor | 12-1 | Check the high pressure sensor. | NG | Repair |
| 13 | 40.4 | Is the bypass valve operating normally? (Wiring and coil unit.) | Yes | 14-1 |
| Bypass valve | 13-1 | Coil resistance: 46 Ω (between No. 5 (+) and No. 1 to 4 (-)) | No | Replace |
| 14 | | | Yes | Repair |
| Engine | 14-1 | Is the engine throttle sticking? | No | Inspection needed |
| 15 Outdoor unit's | 15-1 | operating normally in each operation mode (cooling/heating). (For details on solenoid valve operations in each operating mode, see the section explaining the control functions through | Yes | Replace the outdoor unit's main board |
| solenoid valve check (in the case of 3WAY) | | | No | 15-2 |
| | | Check the outdoor unit's nower hoard | Yes | 15-3 |
| | 15-2 | Check the outdoor unit's power board. Is the outdoor unit's power board CN013 outputting the solenoid power supply voltage (AC 200 V)? | No | Replace the outdoor unit's power board |
| | 15-3 | Are there any poor connections or severed wires in the wiring | Yes | Repair wiring |
| | | between the outdoor unit's power board and relay board? | No | 15-4 |
| | 15.4 | Check the outdoor unit's main board. Does a drive output voltage (DC 12 V) from discharge valves 1-1, 1-2, discharge valve 2, suction valve 2-1 and 2-2 exist with "v_open" (valve open) in the No. 4 test mode? [9P (white) CN018] Discharge valves 1-1, 1-2: between No. 3-9 Discharge valve 2: between No. 4-9 | Yes | 15-5 |
| | 10-4 | Suction valves 2-1, 2-2: between No. 6-9 Does suction valve 1 output a drive voltage (DC 12 V) during cooling operations? Suction valve 1: between No. 3-9 * Note that suction valve 1 closes when electricity is supplied (the other solenoid valves operate in reverse). | No | Replace the outdoor unit's main board |

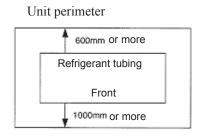
| | 15_5 | Are there any poor connections or severed wires in the wiring | Yes | Repair wiring |
|--|------|--|----------------------|-----------------------------------|
| | 15-5 | between the outdoor unit's main board and relay board? | No | 15-6 |
| | 15-6 | Check the relay board. Does an output voltage (AC 200 V) from discharge valves 1-1, 1-2, discharge valve 2, suction valve 2-1 and 2-2 exist with | Yes | 15-7 |
| | 13-0 | "v_open" (valve open) in the No. 4 test mode? Does suction valve 1 output voltage (AC 200 V) during cooling operations? | No | Replace the relay board |
| | 45.7 | Check the solenoid valve coil. (The power must be turned off before starting work.) Disconnect the connectors of the discharge valve 1-1, 1-2, discharge valve 2, suction valve 1, suction valve 2-1 and 2-2 from the relay board and measure the resistance between No. | Resistance normal | Replace the solenoid valve |
| | 15-7 | 1 and 3. Normal values (20°C): Discharge valves 1-1, 1-2: 543 Ω , Discharge valve 2: 1,132 Ω Suction valve 1: 1,197 Ω , Suction valves 2-1, 2-2: 543 Ω Is the coil operating normally? | Resistance abnormal | Replace the solenoid valve's coil |

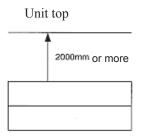
- See instructions packaged with servicing indoor board for procedure on replacing indoor control board.
- See "5. Reference Document" for details on the procedure for replacing the water heat exchanger unit's control board.

• 2-2

Any air shortage?

An air shortage is likely if the installation conditions pictured below are not met.





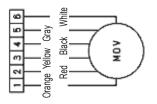
• 6-1

Indoor electric valve check

Electric valve opening determination standards:

During heating operation, after 30 minutes have passed in complete combustion, the indoor coil outlet temperature must exceed 40°C.

Check using No.0 Operation data display.

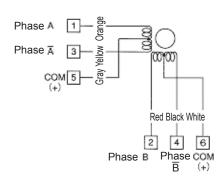


• 6-2

Normal if a pulse voltage is applied across indoor control board connector PMV 6P (white) CN082 No. 5 and No. 1-4 after turning power ON. (About DC4V measured on tester)

• 6-3

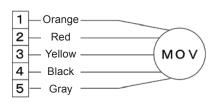
Unplug indoor electric valve connector 6P (white), and measure resistance of electric valve coil between No.5 and No.1-4 using a tester. Replace coil if 0Ω or ∞ (46 Ω is normal).



• 9-1

Checking the Water Heat Exchanger Unit's Motor-Operated Valve Standard for determining that the motor-operated valve is open: The temperature of the water heat exchanger's coolant outlet must be 40°C or higher when 30 minutes have elapsed after reaching complete combustion in the heating mode.

Check this by the No. 0 operation data display.



• 9-2

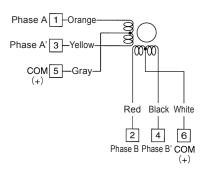
Switch on the power between No. 5 and No. 1-4 and between No. 10 and No. 6-9 of the water heat exchanger unit's control board connectors 10P-1 (white) and 10P-2 (black). Then if a pulse voltage exists, everything is normal.

(Approximately DC 4 V when measured with a tester.)

9-3

Disconnect the water heat exchanger unit's solenoid valve connector 6P-1 (white), and measure the motor-operated valve coil's resistance between No. 5 and No. 1-4 with a tester. If the resistance is 0 Ω or ∞ , replace the coil.

(Approximately 46 Ω is normal.)



11-1

Check outdoor electric valve and backup stop valve

Check by using the following procedure to display the P20 stop data (nonvolatile memory) on the 7-segment LED.

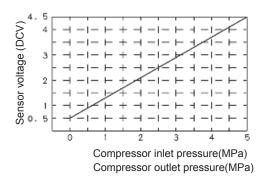
- a. In No.1 Error data display, lightly press the set key once.
- b. Select data code 1-3 using the up and down keys, and press set key for 1 second or more.
- c. Use the up and down keys to change the display data to compare outdoor heat exchanger inlet temperature (data code 16) with compressor inlet temperature (data code 14). If the outlet temperature is lower, the outdoor solenoid valve may be locked.

• 12-1 Check high pressure sensor

Compare control board display and gauge display.

| ① | Install gauge on high pressure side, and display the outdoor | Yes | To ② |
|------------------------------------|--|-----|----------------------------|
| Confirm pressure while stopped | main board compressor outlet pressure. Use No.0 Operation data display (data code 11). Is the difference between display value and gauge pressure within 0.1MPa? | No | То ③ |
| © Confirm pressure | Operate heater or cooler, and check the outdoor main board compressor outlet pressure display. | Yes | Pressure sensor is normal |
| while operating | Is the difference between the display value and gauge pressure within 0.1MPa? | No | То ③ |
| ③ Check outdoor main board voltage | a la thora a DC EV voltage between the outdoor main board | Yes | To b |
| | a. Is there a DC 5V voltage between the outdoor main board connector 6P (red) CN049 No. 4 and No. 6? | No | Replace outdoor main board |
| | b. Is there a voltage equivalent to gauge pressure between the outdoor main board connector 6P (red) CN049 No. 5 and | Yes | Replace outdoor main board |
| | No. 6? | No | То с |
| | c. Wiring connection/contact poor, or wire broken, between | Yes | Repair wiring |
| | control board connector 6P (red) CN049 and compressor outlet pressure sensor? | | Replace pressure sensor |

• For work procedure for replacing outdoor main board, see "5. Reference Document".



• 13-1

| valve | compressor inlet pressure and outlet pressure, and open | | Bypass valve is normal |
|-------|---|----|---|
| | the valve using outdoor main board menu item No. 04. Is the pressure equalized? | No | Bypass valve is defective (does not open) |

P22 Outdoor Unit Fan Error

① Error detection method

- An Outdoor Unit Fan Trouble is assumed when outdoor fan (fan motor) rpm and drive has exceeded the following conditions 5 consecutive times in 1 hour.
 - When outdoor fan (fan motor) revolution is not detected.
 - When an overcurrent is detected in the outdoor fan circuit.
- When the power board has been incorrectly installed.

| - 110W0140H004HB | | | | | | | | |
|------------------|-----|--|-----|------------------------------------|--|--|--|--|
| 1 | | Is the power board correctly installed? | Yes | 2-1 | | | | |
| Power board | 1-1 | POW-GH850M2E | No | Replace it with the correct board. | | | | |
| 2 Outdoor fan | 2-1 | Any outdoor fan motor locking, broken wires, poor contact, or short circuits? (Coil resistance should be around 2-6 Ω for | Yes | Replace outdoor fan motor | | | | |
| motor | | each phase.) | No | 2-2 | | | | |
| | 2-2 | Is the fan motor connection position correct on the power supply board? Is FM1 connected to FM1, and FM2 to FM2? | ОК | 2-3 | | | | |
| | 2-2 | (Confirm that 3P black and 5P black connectors are paired together.) | | Correct the connection | | | | |
| | 2-3 | Replace power board and keep under observation. If P22 reoccurs, replace outdoor fan motor. | | | | | | |

- For work procedure for replacing outdoor main board, see "5. Reference Document".
- For board and Electrical Wiring Diagram, see Chapter 6.
 - Outdoor main board: page VI-2
 - Outdoor power board: page VI-3
 - Converter board: VI-4
 - Indoor control board for DC motor models: page VI-5
 - Outdoor Unit Electrical Wiring Diagram: page VI-6 *Reference (Electrical Circuit Diagram A-B-2-3)

P23 Water Heat Exchanger Unit Interlock Error (for only water heat exchanger unit)

① Error detection method

An error is detected when the following conditions are met:

- After a hot and cold water pump operation command, when the hot and cold water pump interlock signal (no voltage, a contact) is not ON within 5 minutes.
- When the hot and cold water pump interlock signal turned ON once, but turned OFF again while the hot and cold water pump operation signal continued.

| 1 | | Is the hot/cold water pump operation command wiring | Yes | 1-2 |
|----------------------|-----|---|-----|---|
| Water heat exchanger | 1-1 | connected to the auxiliary hot/cold water pump electrical relay? (Notes 1, 3) | No | Request equipment wiring |
| unit's electrical | | | Yes | 1-3 |
| box | 1-2 | Is a hot/cold water pump interlock connected? (Notes 2, 3) | | Request equipment wiring |
| | 1-3 | Are any signal lines severed, faulty or short-circuited? | Yes | Repair |
| | | Are any signal lines severed, laulty of Short-Circuited? | | 1-4 |
| | | Is there any chattering in auxiliary equipment's hot/cold water | Yes | Switch on the power |
| | | | No | 1-5 |
| | | | Yes | Request equipment repair |
| | | pump electrical relay or in the hot/cold water flow switch? (Note 4) | No | Replace the water heat exchanger unit board |

- Note 1: Hot/cold water pump operation command TB3: between No. 1 and No. 2 (No voltage a contact output) Note 2: Hot/cold water pump interlock TB4: between No. 1 and No. 2 (No voltage a contact input)
- Note 3: Operations are possible when there is a short-circuit between No. 3 and No. 4 on the TB3 terminal board, but this may lead to the coolant freezing or other problems owing to a reduced flow volume, so an interlock must be connected without fail.
- Note 4: Switch on the flow switch to confirm that the correct flow volume is being maintained in series with the signals operated by the coolant pump. Check the settings for the flow switch.
- See "5. Reference Document" for details on the procedure for replacing the water heat exchanger unit's control board.

P26 Clutch Connection Error

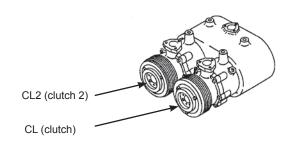
① Error detection method

A Clutch Contact Failure is assumed when the following factors have occurred 5 times.

- When compressor vane assessment (60 seconds) failed during startup.
- When revolution speed did not slow down and there was no change in pressure after 3 minutes of clutch operation during complete engine combustion.

| 4 | | | \/ | F 4 |
|--------------------|-----|--|-----|----------------------------|
| 1 | 1-1 | Does each clutch operate normally after starting the engine? | Yes | 5-1 |
| Clutch | 1-1 | 1-1 Does each clutch operate normally after starting the engine: | | 2-1 |
| 2 | 2-1 | Check conductivity of wiring in clutch that became defective. | Yes | 2-2 |
| Wiring | 2-1 | Check conductivity of willing in clutch that became defective. | No | Repair wiring |
| | | Poor contact in wiring of clutch that became defective | Yes | 3-1 |
| | 2-2 | Poor contact in wiring of clutch that became defective. | No | Repair wiring |
| 3 | | If the defective clutch is clutch 2, shock if DC voltage is | Yes | 4-1 |
| Board | 3-1 | If the defective clutch is clutch 2, check if DC voltage is applied to outdoor main board connector 4P (blue) CN017. | No | Replace outdoor main board |
| 4 | | Does the relay (RY1) in clutch 2 operate normally? | | 5-1 |
| Electric component | 4-1 | boos the relay (IXI I) in oldion 2 operate normally: | No | Replace relay |
| 5 | 5-1 | La companyación defentino | Yes | Compressor Replace |
| Compressor | 0-1 | Is compression defective? | No | Keep under observation |

- For board and Electrical Wiring Diagram, see Chapter 6.
 - Outdoor main board: page VI-2
 - Outdoor power board: page VI-3
 - Converter board: VI-4
 - Indoor control board for DC motor models: page VI-5
 - Outdoor Unit Electrical Wiring Diagram: page VI-6 * Reference (Electric Circuit Diagram A B-3)



P30 Group Control's Sub Unit Error (* warning displayed only on system controller)

① Error detection method

When an error occurs on a group control sub unit (for all abnormalities), the system controller displays P30.

② Troubleshooting

| 1 | 1-1 | Confirm error details using one of the following methods. ①Check warning display on wired remote controller. ②Check warning history in system controller servicing check mode. |
|---|-----|--|
| | 1-2 | Troubleshoot the warning found in 1-1. |

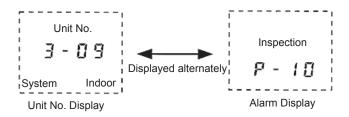
- For board and Electrical Wiring Diagram, see Chapter 6.
 - Outdoor main board: page VI-2
 - Outdoor power board: page VI-3
 - Converter board: VI-4
 - Indoor control board for DC motor models: page VI-5
 - Outdoor Unit Electrical Wiring Diagram: page VI-6

1-1②

System controller service check mode (warning history)

Indoor unit/outdoor unit warning history monitoring mode (also clears warning history)

- ① Press the (Inspect) icon and (Set) button continuously for 4 seconds or more.
- ② Service Check lights, and the item code " 🗓 + " lights.
- ③ When the group number is selected (when [1] is flashing), when any warning history exists, the newest warning history is displayed alternately with the unit number.
- * Temperature settings are not available.



- ④ To check older warning history, press the temperature setting ▲ button or ▼ button, and select the item code (01~04).
- ⑤ To check warnings for other groups, press the Switch Group ◀ button or ▶ button, and select the group number.
- ⑤ To clear the warnings, press the <u>cancel</u> button. (This deletes the entire warning history for the currently selected group.)
- To end the servicing check, press the Inspect button.

P31 Group Control Error (Cannot be detected when the water heat exchanger unit is connected.)

① Error detection method

Under the following conditions, all non-master units in the remote controller group display this error and stop.

- When remote controller linking wiring is connected to an indoor unit independently controlled by a remote controller (L07)
- When multiple master units exist within remote controller group wiring (L03).
- When indoor unit fails to receive from remote controller (central) (E03).

② Troubleshooting

| 1 | 1-1 | Is this indoor unit independently controlled by remote | Yes | 1-2 | | | | | |
|--------------|-----|---|--|-----|--|--|--|--|--|
| Remote | 1-1 | controller? | | 1-3 | | | | | |
| group wiring | 1-2 | In the remote controller detailed settings mode, confirm indepe the remote controller group link wiring. | In the remote controller detailed settings mode, confirm independent control, then disconnect the remote controller group link wiring. | | | | | | |
| | 1-3 | In the remote controller detailed settings mode, check the group settings. If set to "Independent", correct settings. | | | | | | | |

• See "5. Reference Document" for detailed remote controller settings.

oiL Oil Change Time Alarm

① Error detection method

When the oil change time exceeds the EEPROM setting-200 hours. (A02 warning is issued when EEPROM time setting is exceeded.)

Note:

- Engine does not stop with warning.
- No warning detection when the gas type setting is "1."
- When warning is issued, "Check Oil" flashes on remote controller display.

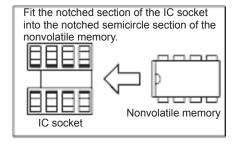
② Troubleshooting

It is time to change the engine oil. After changing the oil, reset the oil change time on the outdoor main board.

5. Reference Document

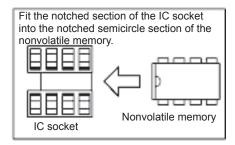
(1) Outdoor Main Board Replacement Sequence and Remote Controller Service Function

- ① Outdoor Main Board Replacement Sequence
 - To replace the outdoor main board, perform the work through the following sequence.
 - 1) Turn off the power supply, and replace the outdoor main board.
 - 2) Transfer the nonvolatile memory (EEPROM) from the old board to the new board.
 - Because engine operation time, oil check time and other data, as well as the various setting values are stored in the nonvolatile memory (EEPROM) inside the outdoor main board, when replacing the outdoor main board the nonvolatile memory needs to be removed from the old board and transferred to the new board.
 - The operation data, setting values and other information will be carried over into the new board.
 - Handle the nonvolatile memory with care. Because the nonvolatile memory needs to be installed in a certain direction (see diagram below), be careful to correctly connect it to the designated sockets. Faulty directional installation will cause the memory to break.



- Because the legs are easily bent, be careful when removing or plugging in the memory.
- 3) Turn on the power supply, and confirm operation.

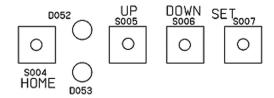
- 2 Outdoor Nonvolatile Memory (EEPROM) Replacement Sequence
 - When replacing the outdoor main board, in the event of nonvolatile memory breakage or F31 error, the work of replacing the outdoor nonvolatile memory should be conducted in the following sequence.
 - A nonvolatile memory is also used in the indoor unit, but be aware that there is no compatibility between the
 memories.
 - 1) To ensure reproduction of the nonvolatile memory contents, before removing the nonvolatile memory make notes of the various judgment values in the parameter setting mode, as well as operation monitor data code numbers 1 to 4, 6 to 9, and oil change time.
 - 2) Install the nonvolatile memory package in the service board in the outdoor main board.
 - Handle the nonvolatile memory with care.
 - Because the nonvolatile memory needs to be installed in a certain direction (see diagram below), be careful to correctly connect it to the designated sockets. Faulty directional installation will cause the memory to break.



- Because the legs are easily bent, be careful when removing or plugging in the memory.
- 3) Turn on the power supply.
- 4) At the initial setting, match outdoor unit capacity (models, etc.) to the outdoor models.
- 5) For subsequent outdoor unit settings, set the other parameters to the best of your knowledge.
- 6) Confirm operation.
- 7) Always be sure to readjust engine ignition timing.

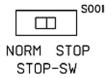
(2) Switch and LED

- ① S004, S005, S006, S007 (HOME, UP, DOWN, SET)
 - These switches are used to perform7-segment LED service display changes and type settings.
 - These key switches are used to determine (maintain operation of) various items, raise and lower items being displayed, etc.



② S001 (All stop switch)

- This switch is used to terminate all the units at the same time.
- Moving this switch to the "Stop" side executes all units to stop, and is thus used during maintenance and other occasions when it is necessary to have the units not operate.
- The switch is set to "STOP" at the factory before shipment, and thus needs to be switched to the "NORM" side for test run.



• For W MULTI system

For W MULTI system, total off can be set to each outdoor unit individually. (Outdoor units without total off set operate as outdoor units with CCU function.)

Caution:

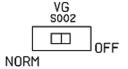
Because outdoor units set to total off have their valves opened, if other outdoor units are operated this way, refrigerant will flow to the outdoor units with total off set, causing malfunction. Therefore, be sure to close the valves of refrigerant gas tube, refrigerant liquid tube, and balance tube of the outdoor units set to total off. If all outdoor units of the system are set to total off, then there is no need to close the shutoff valves.

Use the following procedure to turn off circuit breaker of one or more outdoor units and perform maintenance.

- 1. For one unit, set the STOP switch the "STOP" side. ("PRu5E" appears.)
- 2. After approximately 3 minutes, " F F " appears. (*2) Then, turn off the circuit breaker of the outdoor unit.
- 3. Close the valves of refrigerant gas tube, refrigerant liquid tube, and balance tube.
- 4. After the work is finished, open the closed valves of refrigerant gas tube, refrigerant liquid tube, and balance tube.
- 5. Set the STOP switch to the "NORM" side, and then turn on the circuit breaker.
- 6. When all outdoor units are in complete combustion state and until vane comes out (about the time when all outdoor units simultaneously continue operation for one minute or more)
- 7. For the next targeted outdoor unit, perform the procedure starting from step 1.

3 S002 (Fuel gas solenoid forced off switch)

- This switch is provided for the forced shutdown of the gas solenoid valve.
- Moving this switch to the "OFF" side causes the forced shutdown of the gas solenoid valve. However, when cranking is carried out with the gas valve closed, it immediately stops at "A07". Therefore, when measuring engine compression or for other purposes, use "GASOFF" (fuel gas solenoid valve forced closing setting) of test run and forced setting function "No. 4 TEST".



- Solo (Terminal resistor On/Off switch)
 - This switch is used for matching on communication lines.
 - When only one outdoor unit is connected to a single communication line, confirm that the setting is on the "SHORT" side.
 - The factory setting is "SHORT"
 - When more than one outdoor unit is connected to a single communication line, always set one unit to the "SHORT" side and the rest of the outdoor units to the "OPEN" side.

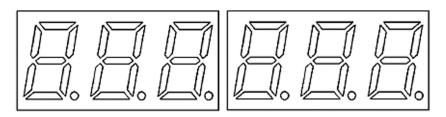


Caution:

Setting the terminal resistor switch for multiple outdoor units to the "SHORT" side can cause communication flaws.

⑤ The 7-segment LED

- This LED indicates the operating status of indoor and outdoor units, changes in set values and various other displays using switches S004 to S007.
- The 7-segment LED has 6 digits.

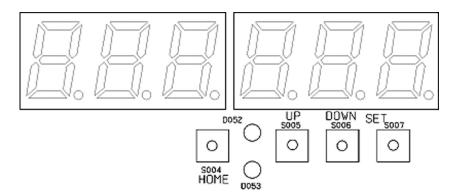


© Indoor/Outdoor communications LED (D043)

• The communications monitor LED for use between outdoor and indoor units.



(3) Display Component Specifications



① Warning display (red)

During warnings, TEST/WARNING LED (D052) flashes.

② Forced setting display (red)

Upon forced settings during normal display, the TEST/WARNING LED (D052) lights. During display of forced settings on the menu item display, the TEST/WARNING LED (D052) lights. (This may be used to search for forced setting items during setting.)

3 Level LED display (green)

The Level LED (D053) displays the setting menu stage level and other information. Level 0 is unlit, Level 1 is light, Level 2 is flashing.

Displays immediately after power is turned ON

When the power supply is turned on, the following displays appear.

• 7-segment LED, TEST/WARNING LED (D052), Level LED (D053) light up

(5 seconds)

• Model name display (1 second)

• Version display (1 second)

| Example: | 8. | 8. | 8. | 8. | 8. | 8. | (All segments light) |
|----------|----|----|----|----|----|----|----------------------|
| Example: | | | 4 | 5 | 0. | -{ | (Model name display) |
| Example: | Н | | | { | 0 | 0 | (Version display) |

When the power supply is turned on while pressing the SET (S007) key, the contents of the nonvolatile memory can be cleared.

•Memory clear procedure

- 1. Turn on the power supply while pressing the SET (S007) key. After 1 second or more, "[L] " will be displayed.
- 2. Press the SET (S007) key again. Activating the nonvolatile memory erase function at this time will display " [E | n | d | | | | | | ".
- 3. Check for power on display

"(If the End display fails to appear, repeat the aforementioned operation until it does appear.)" When the memory is cleared at this time, all the contents of the nonvolatile memory are reset to the initial state.

© Outdoor unit normal display Example: u. 0 1 0 2 0 Number of indoor units (20 units) System address (01)

(4) Operation Unit Specifications

① Operation

Three keys DOWN (S006), UP (S005) and SET (S007) are basically used to perform all display and setting operations.

Pressing the HOME (S004) for one second activates return to the normal display at any time (this key is installed in a slightly separated position).

② Unified operation sequence

Category selection is performed with the UP (S005) and DOWN (S006) keys, and then set with the SET (S007) key

Setting changes are performed with the UP (S005) and DOWN (S006) keys, and confirmed with the SET (S007) key.

The HOME (S004) key is used to display the normal display (the contents of any settings in progress will be canceled).

Simultaneously pushing the HOME key (S004) and DOWN (S006) key for 1 second displays the version. Pressing the SET (S007) key for one second while operation data is displayed (No. 0) cancels all forced settings.

* The times appearing for flashing cycles, operation key depressed period and other indications are approximate values, and not necessarily the accurate times.

(5) Normal Display (Level 0)

The normal display appears after passing through the display subsequent to turning the power supply ON, when selecting menu No. 0, or when no key operation occurs for 10 minutes.

① Normal Display (Level 0)

On this outdoor unit system, the following data displays are repeated at 10-second intervals.

| | , , | 1 2 1 | |
|------------------|--|---|---|
| Display sequence | Display contents | Display examples | Remarks |
| 1 | Number of indoor units Outdoor unit address System address | Number of indoor units Outdoor address System address | Indoor units - 20 units It is always 0. System 01 |
| 2 | Engine operation time | 112345 | 12345 hours |
| 3 | Compressor inlet pressure | 12 100 | |
| 4 | Compressor outlet pressure | [13, 2.00] | |

When conducting automatic addressing, in place of engine operation time, the display will indicate that automatic addressing is in progress.

| Display sequence | Display contents | Display examples | Remarks |
|------------------|--|---|---|
| 1 | Number of indoor units Outdoor unit address System address | Number of indoor units Outdoor address System address | Indoor units - 20 units It is always 0. System 01 |
| 2 | Automatic addressing | H Rdd | Mode 1 Mode 2 Heating Mode 3 Cooling |

② Heater Remaining Power-on Time Display (Level 0)

Conditions: 5 hours yet to elapse since turning on outdoor unit power supply.

Engine yet to be operated since turning on outdoor unit power supply.

Compressor outlet temperature is 60.0 °C or below.

Display : [H - 5 H

Remarks : This display indicates that crank case heater remaining power-on time is 5 hours.

This figure (5) decreases by one for the passage of each hour (4, 3...), returning to the normal

display after 5 hours.

3 3-Minute Off Display (Level 0)

Conditions: Engine startup forcibly delayed by 3 minutes. Display: 7-segment display flashes at 1-second cycles.

Excluded when the No. 9 indoor unit status is displayed.

Warning Display (Level 0)

Conditions: Warning being issued

Display : TEST/WARNING LED flashing. Warning contents displayed on 7-segment LED.

ex) 5 0 0 0 1 Check warning

(S) Error Display (Level 0)

Conditions: Error being issued

Display : TEST/WARNING LED flashing. Warning contents displayed on 7-segment LED.

"When a multiple number of error occur, each error will be displayed in approx. 1-second cycles,

in the sequence of: Outdoor error → Outdoor warning → Indoor error."

© Forced Setting Activated Display (Level 0)

Conditions: Forced setting effective.

Display : TEST/WARNING LED flashing.

(Under these conditions during the normal display, pressing the SET (S007) key for 1 second

cancels all forced settings.)

② Startup Wait Display (Level 0)

Displayed when waiting for startup.

Display examples

| P 0 3 | High compressor outlet temperature |
|-------|---------------------------------------|
| P 15 | Complete gas depletion check underway |
| 820 | High coolant temperature |
| 821 | Low coolant level |
| 822 | During coolant circuitry check |
| P 2 0 | Depending on unequalized pressure |
| 8 1 1 | Low engine oil level |

® Total OFF Display (Level 0)

Setting the STOP switch (S001) to "STOP" activates total off.

The normal display at this time is "PAuSE"

examples

| P A u S E | During total OFF display (when STOP switch input is set to "STOP"). |
|-------------------|---|
| POFF | *In the case of W MULTI, this display appears after 3 minutes. |

System OFF Display (Level 0)

The following display appears during stopped system after system stop command is received.

However, this does not apply during automatic addressing.

When the system is off, all key operations are invalidated other than the Version Display.

5 t o P

Wersion Display (Level 0)

During a simultaneous long press of the SET (S007) key and DOWN key (S006), the following display appears every 1 second.

| 0 4 100 | Main microcomputer version |
|-------------|----------------------------|
| 0. 4. 1.0 1 | DC microcomputer version |
| 0 4 10 5 | Option version |

① Other displays

During a simultaneous long press of the SET (S007) key and UP (S005) key, the following display appears every 1 second.

| Display contents | Display examples | Remarks |
|-------------------------------------|------------------|---|
| Communication collision rate | Col.USE | *This is only an item name (collision rate and usage rate) |
| and usage rate (item names) (Value) | 1 12 | Communication collision rate= 7/ communication usage rate= 12 |

Caution:

Items other than those described above may appear on this display, but they are not related to this model.

(6) Menu Display

Press the UP (S005) or DOWN (S006) key to select menu items.

During and after item changes, the menu number display appears for about 1 second (0.7 seconds), followed by the letter display.

Selecting an item and then pressing the SET (S007) key selects that item.

displayed (contents will not change during setting).

| | Menu item | Letter display | Description | | |
|------|-----------|----------------|---|--|--|
| | n o 8 8 | U 0 1 0 2 0 | Operation data display (forced setting release, data setting) | | |
| | n o 8 t | 0008800 | Error data display (Error reset, log display) | | |
| | n o 0 2. | n : 0 0 0 0 | Oil change time display (change time clear) | | |
| DOWN | EBOR | 3552 | Model type display (double-speed setting) | | |
| Z | n o 8 4 | | Test run/outdoor unit forced setting | | |
| | n o 0 5 | 5 E L o u L | Outdoor unit setting | | |
| | n o 0 6 | 5 E E | Indoor unit setting | | |
| | F B o n | 5 E E 5 E | Generator setting | | |
| _ | n o 0 8 | SEEFPA | Forced engine rpm setting | | |
| UP- | 009 | (n 5 5 5 | Indoor unit status display | | |
| | n o 1 0 | FIRE | Initial setting | | |
| | n a 1 1 | 120401 | Date display | | |

The normal (or special) display usually appears, with key operation used to display current data.

1) Normal display (Level 0)

The following data displays are repeated at 2-second intervals with this outdoor unit system.

| Display sequence | Display contents | Display examples | Remarks |
|------------------|-----------------------------------|------------------|----------------------------|
| 1 | System address, indoor unit count | u0 1 1 2 0 | System 01, 20 indoor units |
| 2 | Engine operation time | 112345 | 12,345 hours |
| 3 | Engine operation count | 2.12345 | 12,345 times |
| 4 | Compressor inlet pressure | 1 2 1 0 0 | 1 MPa |
| 5 | Compressor outlet pressure | 13. 2.00 | 2.0 MPa |

2) Total OFF Setting Display (Level 0)

In normal display state, moving the outdoor board STOP switch (S001) to the "STOP" side causes a shutdown of all units. In the normal display state, Total OFF is normally displayed as PRUSE". As usual, pressing the SET (S007) key (changing to Level 1) activates the display of operation data.

3) Operation Data Display (Level 1)

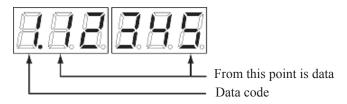
In status 1 or 2, pressing the SET (S007) key activates the display of the system data.

Pushing the HOME (S004) key for 1 second or more, or with no operation for 10 minutes, activates the normal display.

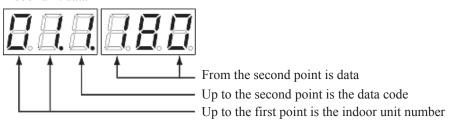
Data is displayed by selecting with the UP (S005) and DOWN (S006) keys.

Data display example

Outdoor unit data



Indoor unit data



4) Forced Setting Release

Pressing the SET (S007) key in the normally displayed status for one second causes all forced set items to be canceled.

5) Data setting operation (Level 2)

Setting start operation method : Press the SET (S007) key for one second in the setting data code select

mode.

This activates the forced setting in progress display. (TEST/WARNING

LED light)

Setting change operation method : After entering the setting start operation mode, operating the UP (S005)

and DOWN (S006) keys make it possible to change the setting details

of the selected setting categories.

Setting confirm operation method: After entering the setting start operation or setting change operation

completed, press the SET (S007) key for one second.

This cancels the forced setting in progress display, making it possible to

once again enter setting item selection operation mode.

(TEST/WARNING LED off)

Setting cancel operation method : Press the HOME (S004) key for one second before confirming setting.

This returns operation to normal. (TEST/WARNING LED off)

The setting details will not change when pressing the HOME (S004) key for one second during setting item select operation.)

Data setting operation is possible from items No. 0 to No. 8.

The following data is displayed.

| Data | Measurement item | | Dianley | Standard operation data | |
|------|--|-------------------|------------------|---------------------------|---------------------------|
| Data | Data name | Unit | Display examples | During cooling operations | During heating operations |
| 1 | Engine operation time | | 112345 | | |
| 2 | Engine operation count | Times | 2. 2345 | | |
| 3 | Starter operation time | Seconds | 3. 234 | | |
| 4 | Starter operation count | Times | 4 1345 | | |
| 5 | Current oil change time | Hrs | 5. 12345 | | |
| 6 | | | | | |
| 7 | | | | | |
| 8 | | | | | |
| 9 | | | | | |
| Α | | | | | |
| b | | | | | |
| С | | | | | |
| d | | | | | |
| E | Clutch on time | Hrs | E. 1500 | | |
| F | Clutch on count | Times | F. 150 | | |
| G | Clutch 2 on time | Hrs | 6. 1500 | | |
| Н | Clutch 2 on count | Times | H 150 | | |
| i | | | | | |
| J | | | | | |
| K | | | | | |
| L | | | | | |
| n | | | | | |
| 0 | | | | | |
| Р | Oil error time | Hrs | P. 0 0 0 0 0 | | |
| q | | min ⁻¹ | | | |
| 10 | 10 Engine revolution setting | | 1022200 | 600~2200 | |
| 11 | 0 | | 1 1 5 5 0 0 | 600~2200 | |
| 12 | Compressor inlet pressure | MPa | 12.0.10 | 0.60~0.90 | 0.30~1.10 |
| 13 | Compressor outlet pressure | MPa | 0 0 3 E 1 | 2.30~3.20 | 2.40~3.30 |
| 14 | Compressor inlet temperature | °C | 14 350 | 5~30 0~30 | |
| 15 | ' ' | °C | 1511100 | 70~110 | 80~110 |
| 16 | Outdoor unit heat exchange inlet temperature | °C | 16. 45.0 | 30~50 | -5~10 |

| | | | | | T |
|----|--|-------------------|------------------|---------|---------|
| 17 | Outdoor unit heat exchange 2 inlet temperature (3WAY only) | °C | 17 450 | 30~50 | -5~10 |
| 18 | | | | | |
| 19 | | | | | |
| 20 | Refrigerant temperature | °C | 20 650 | 60~83 | 55~83 |
| 21 | Outside air temperature | °C | 2 1 2 8 0 | | |
| 22 | Clutch coil temperature | °C | 22.500 | | |
| 23 | Catalyst temperature | °C | 232500 | | |
| 24 | Hot water outlet temperature (optional) | °C | 24 700 | | |
| 25 | | | | | |
| 26 | Oil level measurement temperature (W-Multi) | °C | 26. 540 | 30~100 | 30~100 |
| 27 | | | | | |
| 28 | | | | | |
| 29 | | | | | |
| 30 | | | | | |
| 31 | Clutch coil 2 temperature | °C | 3 1 500 | 30~90 | 30~90 |
| 32 | | | | | |
| 33 | | | | | |
| 34 | Exhaust gas temperature | °C | 3 4 6 5 0 | 45~90 | 40~80 |
| 35 | | | | | |
| 36 | | | | | |
| 37 | | | | | |
| 38 | Outdoor unit fan 1 | % | 3 8 1000 | 0~121 | 0~121 |
| 39 | Outdoor unit fan 2 | % | 3 9 1 0 0 0 | 0~121 | 0~121 |
| 40 | | | | | |
| 41 | Outdoor unit fan revolutions 1 | min ⁻¹ | 4 1 650 | 0~680 | 0~680 |
| 42 | Outdoor unit fan revolutions 2 | min ⁻¹ | 42. 650 | 0~680 | 0~680 |
| 43 | | | | | |
| 44 | Coolant pump setting | min ⁻¹ | 443788 | 3700 | 3700 |
| 45 | Coolant pump revolutions | min ⁻¹ | 453700 | 3700 | 3700 |
| 46 | Throttle | Step | 46 100 | | |
| 47 | Fuel gas regulating valve | Step | 4 7 3 3 8 0 | | |
| 48 | Liquid valve | Step | 48 220 | 0~100 | 0~480 |
| 49 | Bypass valve | Step | 49 100 | 20 | 20 |
| 50 | Outdoor unit solenoid valve 1 | Step | 50 480 | 480 | 0~480 |
| 51 | Outdoor unit solenoid valve 2 | Step | 5 1 480 | 480 | 0~480 |
| 52 | | Step | [5 2. 9 5 0] | 50 | 50~1950 |
| 53 | - | Step | 5 3 200 | 0 | 80~480 |
| 54 | Three-way hot water extraction valve (optional) | Step | 54 50 | 50~1950 | 50~1950 |
| 55 | Revolution speed variable (F_rpm) | | 5 5 0 2 | 0~10 | 0~10 |
| 56 | | | | | |
| 57 | | | | | |
| 58 | Compressor oil level (W-Multi) | _ | 58. 2 | | |
| 59 | Engine load ratio | | 59 30 | 0~6 | 0~6 |
| 60 | | Degrees | 50. 10 | 8~40 | 8~40 |
| 61 | Cylinder number during flameouts | | 511 | | |
| 62 | | | | | |
| 63 | | | | | |
| 64 | | | | | |
| 65 | Gas demand control value | m³/h | 65.000 | | |
| 66 | | | | | |
| | | | | | |

| 67 | | | | |
|----|---|-------|-------------|--|
| 68 | | | | |
| 69 | | | | |
| 70 | Thermostat on unit count | Units | 10 20 | |
| 71 | Average thermostat on intake temperature | °C | 1 () (9 4 | |
| 72 | Average thermostat on discharge temperature | °C | 72 150 | |
| 73 | Average thermostat on E1 temperature | °C | 7 3 5 0 | |
| 74 | | | | |
| 75 | Average thermostat on E3 temperature | °C | 75 70 | |

• Indoor unit data

| 1 | No.1 indoor unit solenoid value opening | Step | 0 1 1 1 8 0 | 64~350 | 300~480 |
|---|--|------|-------------|--------|---------|
| 2 | No.1 indoor unit intake temperature | °C | 0 8 8 8 8 0 | | |
| 3 | 3 No.1 indoor unit discharge temperature | | 0 13 150 | | |
| 4 | No.1 indoor unit E1 temperature | °C | 0 14 10.0 | | |
| 5 | | | | | |
| 6 | No.1 indoor unit E3 temperature | °C | 0 1 5 1 0 0 | | |
| 1 | No.2 indoor unit solenoid valve opening | Step | 0 8 1 1 8 0 | | |
| 1 | *1 | | | | |
| 6 | No.24 indoor unit E3 temperature | °C | 246100 | | |

^{*1} Indoor unit data displays show the data of number (maximum 24 units) of connected indoor units, in the same order.

② Error Data Display: No. 1 (Level 0) < n g 🖫 🗧

Error data displays and error resets are conducted.

Error data, including pretrips, are stored in the nonvolatile memory for the 3 most recent incidents.

When an error occurs for the 4 time and beyond, the oldest error data is erased and the 3 most recent incidents are stored.

A profile of error data is as follows.

- Error code
- Outdoor unit operation data at occurrence of error
- Outdoor unit operation data at occurrence of error
- Outdoor unit warning data 5 seconds before occurrence of error
- Outdoor unit warning data 10 seconds before occurrence of error
- Outdoor unit warning data 15 seconds before occurrence of error
- 1) Display at time of no error (Level 0) The following display appears.

0000000

2) Display at occurrence of error (Level 0)

Displays current error code.

© © R C C (Example of engine oil error)

3) Error reset operation sequence

During display of current error code, pressing the SET (S007) key for 1 second activates the outdoor unit error reset.

When the cause of the error has yet to be removed, an error will occur again immediately after reset. Resetting cannot be performed under the following circumstances.

Reset cannot be conducted under the following situations:

- Indoor unit error: Indoor unit error reset requires that the indoor unit be turned off.
- Oil use time: Oil use time reset must be conducted with the "Oil Use Time Display."
- A11 (Engine oil level fault) cannot be reset. (Error continue until the oil level returns to normal).

4) Error code, temporary stop cause code display (Level 1)

During displays with no error and displays when error incidents occur, pressing the SET (S007) key causes the error code and temporary stop cause code to be displayed.

Data is displayed by selecting with the UP (S005) and DOWN (S006) keys.

| | Data code | Data name | Display examples | Remarks |
|------|-----------|-----------------------------------|------------------|---|
| | 0. | Current error code | 0.00.800 | No error |
| | 1. | Most recent error log code | 1 P 15 | P15 |
| | 2. | Second most recent error log code | 2. R 2 0 | A20 |
| | 3. | Third most recent error log code | 3 804 | A04 |
| 1 | | | 41 12 | Temporary stop cause code *212 |
| DOWN | 4.1. | Stop log 1 | 12345 | Engine operation time when it occurs *1 |
| _ | 4.2. | Stop log 2 | 42 P20 | P20 |
| | | | 12340 | |
| | ~ | ~ | ~ | |
| | 4.9. | Stop log 9 | 49 11 | Temporary stop cause code 11 |
| | | | 12335 | |
| | 4.0 | Stop log 10 | 48 2 | Temporary stop cause code 2 |
| 두 | 4.A. | | 12330 | |
| 1 | 4.B. | Stop log 11 | 46 P03 | P03 |
| | 4.6. | Stop log 11 | 12325 | |
| | 4.0 | Stop log 12 | 4 C. 8 2 O | A20 |
| | 4.C. | Stop log 12 | 12320 | |
| | 5. | error log clear | 5 647 | error log clear |

| | o. Citol log cical | 2. | citor log cical |
|------|---|------|---|
| Note | | | |
| : | *1: Stop cause (or fault code) and stopped engine's *2: Cause code are listed below. | oper | ation time are displayed alternatively. |
| No. | Stop Cause | No. | Stop Cause |
| 1 | Temporary stop due to insufficient differential pressure of refrigerant during startup | 18 | _ |
| 2 | When the discharge temperature is high, but the liquid valve is not yet open. | 19 | The coolant temperature is high, but the 3-way coolant valve is not completely open. |
| 3 | When the discharge temperature is high, but the engine speed is still too high. | 20 | Excessive revolutions in the advantage mode. |
| 4 | When the high-pressure area is high, but the fan output is still too low. | 21 | Momentary stop due to compressor oil return control of the renewal unit. |
| 5 | When the high-pressure area is high, but the engine speed is still too high. | 22 | Momentary stop due to refrigerant 3-way valve positioning control. |
| 6 | When the high-pressure area is high, but the unit is in advantage mode. | 23 | Momentary stop due to the possibility of a flameout. |
| 7 | When the high-pressure area is high, but it is less than 3 minutes since the engine was started. | 24 | Momentary stop due to the possibility of the outdoor unit running out of refrigerant. |
| 8 | Momentary stop during heating high-load learning control 2. | 25 | Momentary stop due to the possibility of a clutch connection error. |
| 9 | Pause due to no compressor oil (W-Multi only.) | 26 | Momentary stop due to a rapid rise in high pressure |
| 10 | When the compressor intake temperature is high, but the high pressure is also high. | 27 | Momentary stop due to a high coolant temperature continuing. |
| 11 | When the discharge temperature is high, but the indoor unit is emitting exhaust. | 28 | Momentary stop due to outdoor unit mode switching being in progress (3WAY only.) |
| 12 | The high pressure is high, but it is still within 4 minutes of outdoor unit refrigerant outlet control. | 29 | Momentary stop due to the alignment of 4-way valves with another unit failing (W-Multi only.) |
| 13 | The high pressure is high, but auto-addressing for the heater is in progress. | 43 | High-pressure avoided during low-capacity heater operations. |
| 14 | The high pressure is high, but auto-addressing is in progress. | 44 | Momentary stop due to engine oil control. |
| 15 | Momentary stop due to heating high-load learning control being in progress. | 45 | Engine stall due to load variation being in progress. |
| 16 | The engine has stalled during clutch control. | 46 | Engine stall due to special high-pressure avoidance control being in progress. |
| 17 | Momentary stop due to 24 hour continual operations. | | |
| | | | |

5) Error Data Display (Level 2)

During error log code display, pressing the SET (S007) key for one second or more activates the error data display at that time.

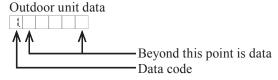
Example: $\[\] \]$ Pressing the SET (S007) key $\rightarrow \[\] \[\] \[$

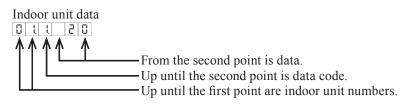
Pressing the SET (S007) key again for one second or more, or when there are no operations for 10 minutes, returns to the normal display.

Example: 1 12345 Pressing the SET (S007) key $\rightarrow 101020$

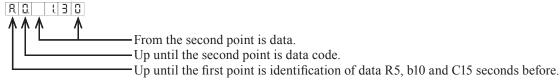
Data is displayed by selecting with the UP (S005) and DOWN (S006) keys.

Data display example





Data from 5, 10 and 15 seconds before is identified as follows.



The data displayed is as follows:

• Outdoor Unit Data

| Data code | Data name | Unit | Display examples | Remarks |
|-----------|-------------------------|---------|------------------|----------------|
| None | Date of malfunction | YYMMDD | 120401 | April 01, 2012 |
| None | Time of malfunction | HHMMSS | 081941 | 08:19:41 |
| 1 | Engine operation time | Hr | 112345 | 12,345 hours |
| 2 | Engine operation count | Times | 2. 2345 | 2,345 times |
| 3 | Starter operation time | Seconds | 3 234 | 234 seconds |
| 4 | Starter operation count | Times | 4 1345 | 1,345 times |
| 5 | | | | |
| 6 | | | | |
| 7 | | | | |
| 8 | Clutch 2 time | | 8 2000 | 2,000 hours |
| 9 | Clutch 2 count | | 9. 200 | 200 times |
| Α | | | | |
| b | | | | |
| С | | | | |
| d | | | | |
| Е | | | | |
| F | | | | |
| G | | | | |
| Н | | | | |
| i | | | | |
| J | | | | |
| K | | | | |
| L | | | | |
| n | | | | |

| Data code | Data name | Unit | Display examples | Remarks |
|--------------|--|-------------------|------------------|-------------------------|
| 0 | | | | |
| Р | | | | |
| q | | | | |
| 10 | Engine revolution setting | min ⁻¹ | 102200 | 2,200 min ⁻¹ |
| 11 | Engine revolutions | min ⁻¹ | 1 1 2 2 0 0 | 2,200 min ⁻¹ |
| 12 | Compressor inlet pressure | Мра | 1 2 0 10 | 0.10 MPa |
| 13 | Compressor outlet pressure | MPa | 13 100 | 1.00 MPa |
| 14 | Compressor inlet temperature | °C | 14 350 | 35.0°C |
| 15 | Compressor outlet temperature | °C | 151100 | 110.0°C |
| 16 | Outdoor unit heat exchange inlet temperature | °C | 16. 450 | 45.0°C |
| 17 | Outdoor unit heat exchange 2 inlet temperature (3WAY only) | | | |
| 18 | | | | |
| 19 | | | | |
| 20 | Refrigerant temperature | °C | 20. 65.0 | 65.0°C |
| 21 | Outside air temperature | °C | 2 1 280 | 28.0°C |
| 22 | Clutch coil temperature | °C | 22. 50.0 | 50.0°C |
| 23 | Catalyst temperature | °C | 232500 | 250.0°C |
| 24 | Hot water outlet temperature (optional) | °C | 24 700 | 70.0°C |
| 25 | | | | |
| 26 | Oil level measurement temperature (W-Multi) | °C | 26. 540 | 54.0°C |
| 27 | | | | |
| 28 | | | | |
| 29 | | | | |
| 30 | | | | |
| 31 | Clutch coil 2 temperature | °C | 3 1 500 | 50.0°C |
| 32 | | | | |
| 33 | | | | |
| 34 | Exhaust gas temperature | °C | 3 4 6 5 0 | 65.0°C |
| 35 | | | | |
| 36 | | | | |
| 37 | | | | |
| 38 | Outdoor unit fan 1 | % | 3 8 1000 | 100% |
| 39 | Outdoor unit fan 2 | % | 391000 | 100% |
| 40 | | | | |
| 41 | Outdoor unit fan revolutions 1 | min ⁻¹ | 4 1 650 | 650 min ⁻¹ |
| 42 | Outdoor unit fan revolutions 2 | min ⁻¹ | 42.650 | 650 min ⁻¹ |
| 43 | | | | |
| 44 | Coolant pump setting | min ⁻¹ | 443700 | 3,700 min ⁻¹ |
| 45 | Coolant pump revolutions | min ⁻¹ | 453700 | 3,700 min ⁻¹ |
| 46 | Throttle | Step | 46. 100 | 100 steps |
| 47 | Fuel gas regulating valve | Step | 47 330 | 330 steps |
| 48 | Liquid valve | Step | 48 220 | 220 steps |
| 49 | Bypass valve | Step | 49. 100 | 100 steps |
| 50 | Outdoor unit solenoid valve 1 | Step | 50 480 | 480 steps |
| 51 | Outdoor unit solenoid valve 2 | Step | 51480 | 480 steps |
| 52 | Three-way coolant valve | Step | 52.1950 | 1,950 steps |
| 53 | Exhaust heat collection valve | Step | 53.200 | 200 steps |
| 54 | Three-way hot water extraction valve (optional) | | 54 50 | 50 steps |

| Data code | Data name | Unit | Display examples | Remarks |
|-----------|---|--------|------------------|------------|
| 55 | Revolution speed variable (F_rpm) | | 5 5 0 2 | 0.2 |
| 56 | | | | |
| 57 | | | | |
| 58 | Compressor oil level (W-Multi) | - | 5 8 2 | Level 2 |
| 59 | | | | |
| 60 | Engine ignition time | Degree | 60. 10 | 10 degrees |
| 61 | | | | |
| 62 | | | | |
| 63 | | | | |
| 64 | | | | |
| 65 | | | | |
| 66 | | | | |
| 67 | | | | |
| 68 | | | | |
| 69 | | | | |
| 70 | Thermostat on unit count | Unit | 10. 20 | 20 units |
| 71 | Average thermostat on intake temperature | °C | 7 1 194 | 19.4°C |
| 72 | Average thermostat on discharge temperature | °C | 7 2. 15.0 | 15.0°C |
| 73 | Average thermostat on E1 temperature | °C | 13. 5.0 | 5.0°C |
| 74 | | | | |
| 75 | Average thermostat on E3 temperature | °C | 75 70 | 7.0°C |

• Indoor Unit Data

| Data code | Data name | Unit | Display examples | Remarks |
|-----------|---|------|------------------|-----------|
| 1 | No.1 indoor unit solenoid valve opening | Step | 0 1 1 1 8 0 | 180 steps |
| 2 | No.1 indoor unit intake temperature | °C | 0.8.8.8.0 | 29.0°C |
| 3 | No.1 indoor unit discharge temperature | °C | 0 1 3 1 5 0 | 15.0°C |
| 4 | No.1 indoor unit E1 temperature | °C | 0 14 100 | 10.0°C |
| 5 | | | | |
| 6 | No.1 indoor unit E3 temperature | °C | 0 1 5 1 0 0 | 10.0°C |
| 1 | No.2 indoor unit solenoid valve opening | Step | 0 2 1 1 8 0 | 180 steps |
| 1 | * 1 | | | |
| 6 | No.24 indoor unit E3 temperature | °C | 246100 | 10.0°C |
| | | | | |

^{*1:} The data for the indoor units connected will be displayed when the latest error history data is being displayed (after initial communication has been completed.)

• Outdoor Unit Data 5 Seconds Earlier (A.1 to A.i)

| Data code | Data name | Unit | Display examples | Remarks |
|-----------|-----------------------------------|-------------------|------------------|-------------------------|
| A.1 | Engine revolution setting | min ⁻¹ | R (2200 | 2,200 min ⁻¹ |
| A.2 | Engine revolutions | min ⁻¹ | R 2. 2 2 0. 0. | 2,200 min ⁻¹ |
| A.3 | Compressor inlet pressure | MPa | R 3 0 10 | 0.10 MPa |
| A.4 | Compressor outlet pressure | MPa | R4 100 | 1.00 MPa |
| A.5 | Compressor inlet temperature | °C | R S 3 S 0 | 35.0°C |
| A.6 | Compressor outlet temperature | °C | R 6. 1 1 0.0 | 110.0°C |
| A.7 | Outdoor unit fan 1 | % | R 7 1000 | 100% |
| A.8 | Outdoor unit fan revolutions 1 | min ⁻¹ | R 8 6 5 0 | 650 min ⁻¹ |
| A.9 | Coolant pump revolutions | min ⁻¹ | R 9 3 7 0 0 | 3,700 min ⁻¹ |
| A.A | Throttle | Step | R R | 100 steps |
| A.b | Fuel gas regulating valve | Step | R b. 330 | 330 steps |
| A.C | Liquid valve | Step | R C. 220 | 220 steps |
| A.d | Bypass valve | Step | R d 100 | 100 steps |
| A.E | Outdoor unit solenoid valve 1 | Step | R E. 480 | 480 steps |
| A.F | Outdoor unit solenoid valve 2 | Step | RF. 480 | 480 steps |
| A.G | Revolution speed variable (F_rpm) | | R G Q 2 | 0.2 |
| A.H | | | | |
| A.i | Engine ignition time | Degree | R (10 | 10 degrees |

• Outdoor Unit Data 10 Seconds Earlier (b.1 to b.i)

| Data code | Data name | Unit | Display examples | Remarks |
|-----------|---------------------------|-------------------|------------------|----------------------------------|
| b.1 | Engine revolution setting | min ⁻¹ | P 15500 | |
| | | ł | Same as the outo | door unit data 5 seconds earlier |
| b.i | Engine ignition time | Degree | ь | |

• Outdoor Unit Data 15 Seconds Earlier (C.1 to C.i)

| Data code | Data name | Unit | Display examples | Remarks |
|-----------|---------------------------|-------------------|------------------|----------------------------------|
| C.1 | Engine revolution setting | min ⁻¹ | 0.00513.3 | |
| | | ł | Same as the outo | door unit data 5 seconds earlier |
| C.i | Engine ignition time | Degree | [| |

Note: The data during normal display will be displayed with the same digits, but there are cases in which accuracy is deteriorated.

6) Error log clear

Clears all of the error log and temporary stop causes for this outdoor unit.

Operation method: Press the SET (S007) key for one second. $\boxed{5.81.21.7} \rightarrow \boxed{5.-21.7} \rightarrow \boxed{5.81.21.7}$ (clearing) (complete)

7) Error (alarm) code list

| Error | Error (Alarm) Contents | Error | Error (Alarm) Contents |
|------------|--|-------|--|
| Code | | Code | , , |
| A00 | No error occurred | | (System F: Defective sensors, memories and |
| | (System A: Engine system protective device | F01 | other parts) Indoor unit heat exchanger inlet temperature |
| | operation) | 101 | sensor error |
| A01 | Engine oil pressure error | | E1 sensor error (when the water heat exchanger |
| A02 | Engine oil error | | unit is connected) |
| A03 | Engine high-revolution error | F02 | Anti-icing sensor error (when the water heat |
| A04 | Engine low-revolution error | | exchanger unit is connected) |
| A05 | Ignition power supply error | F03 | Indoor unit heat exchanger outlet temperature |
| A06 | Engine start failure | | sensor error |
| A07 | Fuel gas valve error | | E3 sensor error (when the water heat exchanger |
| A08 | Engine stall | F04 | unit is connected) |
| A10 A11 | High exhaust gas temperature Engine oil level error | F04 | Compressor outlet temperature sensor error Outdoor unit heat exchanger inlet temperature |
| A14 | Engine oil pressure switch error | 100 | sensor error |
| A15 | Starter power supply output short circuit | | Outdoor unit heat exchanger 2 inlet temperature |
| A16 | Starter lock | | sensor error (3WAY only) |
| A17 | CT error (starter current detection failure) | F08 | Outside air temperature sensor error |
| A19 | Low coolant temperature | FI0 | Indoor unit intake temperature sensor error |
| A20 | High coolant temperature | | Water intake temperature sensor error (when the |
| A21 | Coolant level error | | water heat exchanger unit is connected) |
| A22 | Coolant pump error | F11 | Indoor unit discharge temperature sensor error |
| A23 A24 | Crankshaft angle sensor error | | Water discharge temperature sensor error (when |
| A24 | Camshaft angle sensor error Clutch error | F12 | the water heat exchanger unit is connected) Compressor inlet temperature sensor error |
| A26 | Flameout error | F13 | Coolant temperature sensor error |
| A27 | Catalyst temperature error (for only models fitted | F16 | Compressor inlet/outlet pressure sensor error |
| | with a catalyst) | F18 | Exhaust gas temperature sensor error |
| A28 | Generator error (detected only with HP) | F20 | Clutch coil temperature sensor error |
| A29 | Converter error (detected only with HP) | F21 | Clutch 2 coil temperature sensor error |
| | | F29 | Indoor unit non-volatile memory (EEPROM) error |
| | (System E: Communication system errors) | F30 | Real time clock (RTC) function error |
| E01 | Remote controller receive failure | F31 | Outdoor unit non-volatile memory (EEPROM) |
| E02 E03 | Remote controller transmission failure Indoor unit receive failure from the remote | | error |
| LUS | controller (central) | | (System L: Duplicate address and other setting |
| E04 | Indoor unit receive failure from the outdoor unit | | defects) |
| E05 | Indoor unit transmission failure to outdoor unit | L02 | Inconsistencies in indoor/outdoor units (non-GHP |
| E06 | Outdoor unit receive failure from the indoor unit | | equipment connected) |
| E07 | Outdoor unit transmission failure to the indoor | L03 | Multiple main units set for group control |
| | unit | L04 | Duplicate system (outdoor unit) address setting |
| E08 | Duplicate indoor unit address setting | L05 | Duplicate indoor unit priority setting (priority |
| E09 | Multiple main remote controller units set | | indoor unit) |
| E10 | DC fan driver communication error | L06 | Duplicate indoor unit priority setting (excluding |
| E11 | Indoor unit receive failure from the signal output board | L07 | priority indoor units) Group control wiring exists for individual-control |
| E12 | Auto-address start forbidden due to auto- | LUI | indoor unit |
| - '- | address in progress | L08 | Indoor unit address not set |
| E13 | Indoor unit transmission failure to the remote | L09 | Indoor unit capacity not set |
| | controller | L10 | Outdoor unit capacity not set |
| E15 | Automatic address alarm (too few units) | L13 | Indoor unit model setting defect |
| E16 | Automatic address alarm (too many units) | L15 | Indoor unit pairing defect |
| E18 | Group control wiring communication failure | L16 | Water heat exchanger unit setting defect (when |
| E20 | No indoor unit | 1.40 | the water heat exchanger unit is connected) |
| E24 | Communication failure between outdoor units | L19 | Duplicated water heat exchanger unit parallel |
| E26 | (only detected with W-Multi) Inconsistency in number of outdoor units (only | | address (when the water heat exchanger unit is connected) |
| E20 | detected with W-Multi) | L21 | Gas type setting failure |
| E31 | Communication failure between units | | Sac type setting failure |
| | Communication failure between units | | |

| Error Code | Error (Alarm) Contents |
|---------------|---|
| | (System P: Indoor/outdoor protective device |
| | operations) |
| P01 | Indoor fan error / indoor fan rpm error |
| P03 | High compressor discharge temperature |
| P04 | Refrigerant high-pressure switch operations |
| P05 | Power supply error |
| P09 | Indoor unit ceiling panel connector connection defect |
| P10 | Indoor unit float switch operations |
| P11 | Water heat exchanger unit anti-icing sensor |
| | error (when the water heat exchanger unit is connected) |
| P12 | Indoor DC fan error |
| P13 | Refrigerant circuit error (only detected with |
| | W-Multi and 3WAY) |
| P14 | O ₂ sensor operations |
| P15 | Total refrigerant gas depletion |
| P18 | Bypass valve failure |
| P19 | 4-way valve lock error (not detected with 3WAY) |
| P20 | Refrigerant high-pressure error |
| P22 | Outdoor unit fan error |
| P23 | Water heat exchanger unit interlock error (when |
| DOC | the water heat exchanger unit is connected) |
| P26 P31 | Clutch connection error |
| PSI | Group control error |
| | (Others) |
| H07 | Compressor oil depletion error (only detected |
| | with W-Multi) |
| H08 | Oil level sensor error (only detected with W-Multi) |
| P30 | Group sub unit error |
| . 00 | (error detected with the system controller) |
| oiL | Oil change time (level) alarm |
| GE | Backup operating display without power |
| - | generation when an error occurs with the |
| | converter (only detected with HP) |

Note: Depending on the model, some items are not displayed.

3 Oil Change Time Display: No. 02 (Level 0) < n a 2 2 >

This function displays the oil change time.

Key operations are used to perform the oil change time clear setting.

1) Oil change time display (Level 0)

This display indicates the current oil change time. Example: a 1234 (Example: 1,234 hours)

2) Oil setting selection operations (Level 1)

Press the SET key when the oil change time is displayed to display the following.

The use of the DOWN and UP keys at this time enable the oil change time clear setting to the selected.

| | Display | Function |
|-------|-------------|--|
| ↑Down | 0 1234 | Oil change time display / clear setting. |
| ↓Up | 0 1 1 8 8 8 | Forced oil refill setting. |

④ Model Type Display: No. 03 (Level 0) < □ □ □ □ □ >

This function is used to display the outdoor unit model type.

It may also be used for the double-speed setting (fast-forwarding the forced 3-minute off timer).

Operating the UP (S005) and DOWN (S006) keys causes the menu to change.

1) Model type display (Level 0)

Outdoor unit model types are displayed in the following way.

| | Display |
|---------------|---------|
| Not set | |
| 45.0kW models | 4501 |
| 56.0kW models | 5601 |
| 71.0kW models | 7 1 2 1 |
| 85.0kW models | 8501 |

2) Double-speed setting (Level 0)

Operating method: Pressing the SET (S007) key for one second in the model type display mode moves to

the double-speed setting display. (TEST/WARNING LED light)

Releasing method: Press the SET (S007) key for one second in the double-speed setting mode.

(TEST/WARNING LED off)

Operation : The 3-minute off time timer counts at 10 times or greater speed than normal.

The forced setting in progress display appears during the double-speed setting. (TEST/

WARNING LED light)

- (5) Test Run and Outdoor Unit Forced Settings: No. 4 (Level 0) < \[n \] \[n \] \[0 \] \[1 \] \] > Key operation is used to determine the settings for forced test run, forced bypass valve closing, forced water circuit and forced valve opening.
 - 1) Test run and forced setting display (Level 0)
 Displays of the test run and forced settings selected with the menu.

 | | | | | | | | | | | | |

2) Forced setting selection operation (Level 1)

Pressing the SET (S007) key in the test run/forced setting display mode causes the following display to appear.

Operating the UP (S005) and DOWN (S006) keys in this mode makes it possible to select the settings for forced cooling test run, forced heating test run, forced valve opening, forced water circuit, forced bypass valve closing, forced engine distributor mode, forced engine feedback, and forced engine adjustment valve closing.

| | Display | Function |
|--------------|-----------|---|
| †Down ↓Up | [[o o l | Forced cooling test run setting |
| | HERE | Forced heating test run setting |
| | U oPEn | Forced valve opening setting |
| | PunP | Forced water circuit setting |
| | UCLOSE | Forced bypass valve closing |
| | S 8 . r | Coolant air purging mode |
| | E SPR- | Forced engine distributor mode |
| | E FEEd | Forced engine feedback |
| | ECLOSE | Forced engine adjustment valve closing |
| | outdEF | Forced defrosting operation setting (not possible with W-Multi or 3WAY) |
| | 6,5,85 | Pressure sensor ignored |
| | GRSOFF | Forced gas solenoid valve closing |
| | 5 tr on | Forced cranking mode |

| 3) Forced cooling test run setting (l | Level | 2) |) |
|---------------------------------------|-------|----|---|
|---------------------------------------|-------|----|---|

Display : \| \[\[\[\[\[\[\[\[\] \] \] \]

Rejection conditions: Heating test run in progress, valve open, all stop operation in progress, automatic

addressing in progress, indoor unit operation in progress.

Operating method : Press the SET (S007) key for one second while forced cooling test run is not in

progress. (TEST/WARNING LED light)

Operation details : Cooling test run is activated.

Forced setting in progress display (TEST/WARNING LED light) is shown during

this time.

Releasing method : Press the SET (S007) key for one second during forced cooling test run.

The forced-setting used in forced cooling test run will be canceled at this time.

(TEST/WARNING LED off)

4) Forced heating test run setting (Level 2)

Display : HEAE

Rejection conditions: Cooling test run underway, valve open, all stop operation in progress, automatic

addressing in progress, indoor unit operation in progress.

Operating method : Press the SET (S007) key for one second while forced heating test run is not set.

(TEST/WARNING LED light)

Operation details : Forced setting in progress display (TEST/WARNING LED light) is shown during

this time.

Releasing method : Push the SET (S007) key for 1 second during forced cooling heating operation.

The forced setting used in forced heating test run will be canceled at this time.

(TEST/WARNING LED off)

5) Force valve opening setting (Level 2)... Used for evacuation, etc. Display : W o P E n Rejection conditions: Forced cooling test run in progress, forced heating test run in progress, bypass valve being closed Operating method : Press the SET (S007) key for one second while forced valve opening is not set. (TEST/WARNING LED light) Operation details : Indoor unit electric valve, outdoor unit electric valve 1, outdoor unit electric valve 2, liquid valve and bypass valve fully open. Forced setting in progress display (TEST/WARNING LED light) is shown during this time. Releasing method Press the SET (S007) key for one second in forced valve open setting mode. The forced setting in progress display will be canceled at this time, returning to forced setting select operation. (TEST/WARNING LED off) 6) Force water circuit setting (Level 2)... Used for cooling water system air discharging, etc. Display : PunP Rejection conditions: None : Press the SET (S007) key for one second when the forced water circuit is not set. Operating method (TEST/WARNING LED light) Operation details Coolant pump operating. The coolant electric 3-way valve repeats a cycle of 50 steps for 3 minutes and then 1950 steps for 1 minute and 16 seconds. The hot water electric 3-way valve repeats a cycle of 1950 steps for 30 seconds, 50 steps for 3 minutes, and 1950 steps for 46 seconds. Forced setting in progress display (TEST/WARNING LED light) is shown during this time. Releasing method Press the SET (S007) key for one second in forced water circuit mode. The forced setting in progress display will be canceled at this time, returning to forced setting select operation. (TEST/WARNING LED off) 7) Forced bypass valve closing setting (Level 2) ... Used for pump down, etc. : 8666 Display Rejection conditions: Valve is open. Operating method : Press the SET key for one second without forced bypass valve closing being set. (The TEST/WARNING LED will be illuminated.) Operation details : Fully close the bypass valve. Perform the necessary operations on the liquid valve, the indoor and indoor units' expansion valves, and the outdoor unit's fan pump down. The forced setting in progress message will be displayed during this (the TEST/ WARNING LED will be illuminated.) Release method Press the SET key for one second while the forced bypass valve is closed. The forced setting in progress message will be cleared (the TEST/WARNING LED will be extinguished) and the display will return to the forced setting selection operation. 8) Coolant air discharge mode (level 2)... Used for coolant air discharge. * Be sure to set up the air discharge tool. If the air discharge is not enough, perform this control operation again and then check to make sure the air has been discharged. : 5 8 , 5 Display Rejection conditions: Test run in progress, automatic addressing in progress, stopping due to abnormality Operating method : When the coolant air discharge mode is not set, press the SET (S007) key for one second. (TEST/WARNING LED light) Operation details : Operate the coolant pump, coolant 3-way electric valve, and hot water 3-way electric valve to discharge air. During operation in air discharge mode, coolant pump, coolant 3-way electric valve, and hot water 3-way electric valve are controlled automatically to discharge

The forced setting in progress display will be canceled. (TEST/WARNING LED off)

Forced setting in progress display (TEST/WARNING LED light) is shown during

this time.

Automatic operation is canceled.

Releasing method

9) Forced engine distributor mode (Level 2) ... Used when fixing ignition timing.

Display : E 5 P R r

Rejection conditions: None

Operating method : Press the SET (S007) key for one second while forced engine distributor mode is

not set. (TEST/WARNING LED light)

Operation details : Activates forced engine distributor mode.

Forced setting in progress display (TEST/WARNING LED light) is shown during

this time.

Releasing method : Press the SET (S007) key for one second while in forced engine distributor mode.

The forced setting in progress display will be canceled at this time, returning to

forced setting select operation. (TEST/WARNING LED off)

10) Forced engine feedback (Level 2)

Display : E FEEd

Rejection conditions: None

Operating method : Press the SET (S007) key for one second while forced engine feedback is not set.

(TEST/WARNING LED light)

Operation details : Activates feedback control.

Forced setting in progress display (TEST/WARNING LED light) is shown during

this time.

Releasing method : Press the SET (S007) key for one second during forced engine feedback.

The forced setting in progress display will be canceled at this time, returning to

forced setting select operation. (TEST/WARNING LED off)

11) Forced engine adjustment valve position (Level 2)

Display : E E L o 5 E

Rejection conditions: Indoor unit operation in progress.

Operating method : Press the SET (S007) key for one second while the forced engine adjustment valve

closing is not set. (TEST/WARNING LED light)

Operation details : Set fuel gas adjustment valve at full closing position.

Forced setting in progress display (TEST/WARNING LED light) is shown during

this time.

Releasing method : Press the SET (S007) key for one second when forced engine adjustment valve is

being closed.

Forced setting in progress display is canceled (TEST/WARNING LED off) and forced setting selection operation returns. (After positioning, forced engine

adjustment valve closing position is canceled automatically.)

- 12) Forced defrosting operation setting (Level 2)... Used when frost builds up on the outdoor unit's heat exchanger when in the heating mode.
 - * Cannot be set with W-Multi and 3WAY.
 - * This setting applies a load to the equipment, and it must not be set if no frost has built up on the outdoor unit's heat exchanger.
 - * Defrosting operations perform the enforced cooling cycle (even when the indoor unit is in the heating mode.) It is therefore necessary to be the permission of the customer before making this setting.

Display : outdef

Rejection conditions: Operations are paused when defrosting operations are in progress (with the

exception of the forced defrosting operations.)

Operating method : Press the SET key for one second without forced defrosting operations being set.

(The TEST/WARNING LED will be illuminated.)

If the operation signals are not issued by the indoor unit, perform operations with the test run setting or the remote controller, etc. (This is possible in both the cooling

and heating modes.)

Operation details : If the engine is operating when the enforced setting is made, operations will be

temporarily paused.

The cooling cycle defrosting operations will be performed for ten minutes.

However, if operation signals are not issued by the indoor unit, the equipment will

go into standby mode without operating.

The forced setting in progress message will be displayed during this (the TEST/

WARNING LED will be illuminated.)

Release method : Press the SET key for one second while the forced defrosting operations are set.

The forced setting in progress message will be cleared (the TEST/WARNING LED will be extinguished) and the display will return to the forced setting selection

operation.

The setting will be cleared automatically once the defrosting operations have been performed for 10 minutes and when 20 minutes has elapsed since the defrosting

settings was made (including the standby time.)

13) Pressure sensor ignored (Level 2)

Display : d , 5 P 5

Rejection conditions: None

Operating method : Press the SET key for one second. (The TEST/WARNING LED will be

illuminated.)

Operation details : Fix the value of the pressure sensor.

The forced setting in progress message will be displayed during this (the TEST/

WARNING LED will be illuminated.)

Release method : Press the SET key for one second with the pressure sensor being ignored.

The forced setting in progress message will be cleared (the TEST/WARNING LED will be extinguished) and the display will return to the forced setting selection

operation.

14) Forced fuel gas solenoid valve closing (Level 2)

Display : [5|8|5|0|F|F]

Rejection conditions: None

Operating method : Press the SET (S007) key for one second when forced fuel gas electric valve closing

is not being set. (TEST/WARNING LED light)

Operation details : Fuel gas electric valvel is blocked.

Forced setting in progress display (TEST/WARNING LED light) is shown during

this time.

Releasing method : Press the SET (S007) key for one second or more when forced fuel gas electric

valve closing is being set.

The forced setting in progress display will be canceled at this time, returning to

forced setting select operation. (TEST/WARNING LED off)

| 15) | Forced cranking mod | de (Level 2) Used when measuring engine compression. | | |
|-----|--|--|--|--|
| | Display | : 5 t - 0 n | | |
| | Rejection conditions | | | |
| | Operation method | : Press the SET key for one second without the forced cranking mode being set. (The TEST/WARNING LED will be illuminated.) | | |
| | Operation details | : Operations will be halted automatically when the engine is operating. | | |
| | · F | Uses the DOWN and UP keys to implement cranking after the engine has been halted. | | |
| | | The engine's maximum revolution speed will be displayed on the 7-segment LED | | |
| | | between the start and end of cranking. | | |
| | | Cranking can be performed as many times as required with the DOWN and UP keys. | | |
| | | The forced setting in progress message will be displayed during this (the TEST/ WARNING LED will be illuminated.) | | |
| | | * Only cranking will be performed in this mode. Engine operations will not be performed. | | |
| | Release method | : Press the SET key for one second while the forced cranking mode is set. | | |
| | | The forced setting in progress message will be cleared (the TEST/WARNING LED | | |
| | | will be extinguished) and the display will return to the forced setting selection | | |
| | | operation. | | |
| | * The HOME kev c | annot be used in the forced cranking mode. The display will also not return to the | | |
| | normal display if | no key operations are performed for 10 minutes. Clear the forced setting and then press return to the normal display. | | |
| | | | | |
| | <outline m<="" of="" td="" usage=""><td></td></outline> | | | |
| | | for one second when 5 k r a n is displayed. | | |
| | | ll be displayed and the TEST/WARNING LED (red) will be illuminated. | | |
| | | will be halted automatically if they are in progress. | | |
| | | re the engine has stopped and then press either the DOWN or UP keys. | | |
| | | s cannot be pressed while the 7-segment LED is blinking.) | | |
| | | rt 3 seconds later and last for 5 seconds. | | |
| | The engine's maximum revolution count will be displayed during cranking. | | | |
| | Display example: | | | |
| | | ② to perform cranking once again. | | |
| | | evolutions displayed in step @ will be reset to before cranking at \(\bigcup \). | | |
| | | for one second to end the process. | | |
| | | ll be displayed and the TEST/WARNING LED (red) will be extinguished. | | |
| | | rced cranking mode. The display will return to the normal display if left in this state | | |
| | with no key opera | tions for 10 minutes, and when the HOME key is pressed for one second.) | | |

© Outdoor Unit Setting: No. 5 (Level 0) < \[\tau \] \[

1) Outdoor unit setting display (Level 0)
Displays selection of outdoor unit setting mode at the menu.

[5] [E] [D] [U] [E]

2) Outdoor unit setting item select operation (Level 1)

Pressing the SET (S007) key while in the outdoor unit setting display mode activates the following display.

Pressing the UP (S005) and DOWN (S006) keys in this mode makes it possible to select the date code.

3) Outdoor unit setting operation (Level 2)

Setting start operation method : Press the SET (S007) key for one second in the setting data code select

mode.

This activates the forced setting in progress display. (TEST/WARNING

LED light)

Setting change operation method : After entering the setting start operation mode, operating the UP (S005)

and DOWN (S006) keys make it possible to change the setting details

of the selected setting categories.

Setting confirm operation method: After entering the setting start operation or setting change operation

completed, press the SET (S007) key for one second.

This cancels the forced setting in progress display, making it possible to once again enter the outdoor unit setting item selection operation mode.

(TEST/WARNING LED off)

Setting cancel operation method : Press the HOME (S004) key for one second before confirming setting.

This returns operation to normal. (TEST/WARNING LED off)

The setting details will not change when pressing the HOME (S004) key for 1 second during outdoor unit setting item select operation

4) Outdoor Unit Setting List (1)

| Julia | Outdoor Unit Setting List (1) | | | | | | |
|-------|-------------------------------|--|-----------|---|--|--|--|
| | Data code | Data | Data code | Data | | | |
| | 00 | | 70 | | | | |
| | ~ | | 71 | | | | |
| | 3F | | 72 | | | | |
| | 40 | | 73 | | | | |
| | 41 | | 74 | | | | |
| | 42 | Minimum set revolution speed | 75 | | | | |
| | 43 | Maximum set revolution speed | 76 | | | | |
| | 44 | Oil change time display switch | 77 | Mixer offset | | | |
| | | | 78 | | | | |
| | | | 79 | | | | |
| | | | 7A | | | | |
| | 4.5 | | 7B | | | | |
| | 45 | | 7C | | | | |
| | 46 | Automatic cooling/heating mode | 7D | | | | |
| | 47 | | 7E 7F | Facing links of an austinus times a state of | | | |
| | 48 | | I | Engine linked operation time setting | | | |
| | 49 | | 80 | | | | |
| | 4A | | 81 | | | | |
| | 4B | | 82 | Deference aveters | | | |
| | 4C | | 83 | Reference system | | | |
| | 4D | | 84 | Cooler/heater auto-control | | | |
| | 4E | | 85 | Revolution speed differential reference | | | |
| | 4F | at (Casling high procesure offeet) | 86 | | | | |
| | 50 | α1 (Cooling high-pressure offset) | 87 | lanition time offeet | | | |
| ←Down | 51 52 | α2 (Heating high-pressure offset) | 88 89 | Ignition time offset | | | |
| NO W | 52 | α3 (Cooling low-pressure offset) | 8A | | | | |
| Ì | 53 | α4 (Heating low-pressure offset) α5 (Cooling low-pressure offset 2) | 8B | | | | |
| | 55 | | 8C | | | | |
| | 56 | α6 (Heating low-pressure offset 2) Fuel adjustment valve offset | 8D | | | | |
| | 57 | Silent | 8E | | | | |
| | 57 | Silerit | 8F | | | | |
| | | | 90 | | | | |
| | | | 91 | | | | |
| | | | 92 | | | | |
| | | | 93 | | | | |
| è | 58 | Silent start | 93 | | | | |
| ↓ | 59 | Silent end | 95 | | | | |
| | 59 5A | Silent end | 96 | | | | |
| | 5A 5B | Anti franzina tomporatura | 97 | Indoor unit colonoid valvo anan/alasa | | | |
| | 5C | Anti-freezing temperature Throttle offset | 98 | Indoor unit solenoid valve open/close Indoor unit drain pump on/off | | | |
| | 50 | Outdoor unit solenoid valve heater | | | | | |
| | 5D | thermostat on initial opening | 99 | Catalyst temperature sensor existence | | | |
| | 5E | and the state of t | 9A | | | | |
| | 5F | | 9B | | | | |
| | 60 | Thermostat off diff | 9C | | | | |
| | 61 | Thermostat on diff | 9D | | | | |
| | 62 | Cooling/heating switch diff | 9E | | | | |
| | 63 | GUF thermostat off diff | 9F | | | | |
| | 64 | GUF thermostat on diff | | | | | |
| | 65 | GUF cooling/heating switch diff | | | | | |
| | | Outdoor unit solenoid valve heater | | | | | |
| | 66 | operation lowest opening | | | | | |
| | 67 | | | | | | |
| | 68 | | | | | | |
| | 69 | | | | | | |
| | 6A | | | | | | |
| | 6B | | | | | | |
| | 6C | | | | | | |
| | 6D | | | | | | |
| | 6E | | | | | | |
| | 6F | Anti-freezing timer | | | | | |

| 6F | Anti-freezing timer | (The default value is the reference value. Subject to amendment without prior notice.)

| A0 A1 A2 A2 A3 A4 A5 A6 A6 A6 A6 A6 A7 Refrigerant shut-off value (optional) existence W-Multi oil collection control setting D8 D9 DA DB DB DC DD DE AF B0 B1 B2 B3 B3 B4 B5 B6 B7 BB BA BB BB | | Data code | Data | Data code | Data |
|---|----------|-----------|--|-----------|------|
| A1 | | | | | |
| A2 | | | | | |
| A3 | | | Energy-saving mode setting * | | |
| A4 | | | Livergy saving mode setting | | |
| A5 | | | | | |
| A6 A7 Refrigerant shut-off value (optional) existence A8 A9 AA AB AC AD AF B0 B1 B2 B3 B4 B5 B6 B7 B8 B7 B8 B9 BA BB BC C0 C1 C1 C2 C3 C3 C4 C5 B1 B2 C5 B1 B2 | | | | | |
| A7 Refrigerant shut-off value (optional) existence | | | | | |
| A7 existence A8 W-Multi oil collection control setting A9 AA AB AC AC AD AE AF BO B1 B2 B3 B4 B5 B6 B7 B8 B9 BA BB BC BC BD BB BC BC CO C1 C2 C3 C4 C5 BC BC C5 BC | | A6 | | D6 | |
| A9 AA AB AA AB AC AD AAF B0 B1 B2 B3 B4 B5 B6 B7 B8 B9 BA BB BC BD BB BC BD BB BC BD BB BC BC BD BB BC BC BC BD BB BC | | A7 | | D7 | |
| A9 AA AB AA AB AC AD AAF B0 B1 B2 B3 B4 B5 B6 B7 B8 B9 BA BB BC BD BB BC BD BB BC BD BB BC BC BD BB BC BC BC BD BB BC | | A8 | W-Multi oil collection control setting | D8 | |
| AA AB AC AD DB DC AD DB DC AD DD DE AF BO BB | | | Ç | | |
| AB AC AD DB DC DD DD DE AE BE BF CO C1 C2 C3 C3 C4 C5 F3 C4 C5 F5 C5 | | | | | |
| AC AD AE AF BB | | | | | |
| AD | | | | | |
| AE AF B0 DF E0 DF E0 E1 E2 E3 E3 E4 E5 E6 E7 E6 E7 E8 E9 EA EB EC ED ED EE EB EC ED EE EE EF C0 F1 C2 C3 C4 C5 F3 F4 F5 | | | | | |
| AF B0 B1 B2 B3 B4 B5 B6 B7 Fan output when snowfall sensor input is "yes" BB BB BC BB BC BB BC BB BC BC BD BE BC BC C0 C1 C2 C3 C3 C4 C5 | | | | | |
| B0 B1 B2 B2 B3 B4 B5 B6 B7 Fan output when snowfall sensor input is "yes" B8 B9 BA BB BC BD BE BF C0 C1 C2 C3 C4 C5 BD B1 F3 C4 C5 | | | | | |
| B1 B2 B3 B4 B5 B6 B7 Fan output when snowfall sensor input is "yes" B8 Fan output when snowfall sensor input is "yes" E9 EA BB BC BD BE BF C0 C1 C1 C2 C3 C4 C5 BD C4 C5 | | | | | |
| B2 B3 B4 B5 B6 B7 Fan output when snowfall sensor input is "yes" E8 B8 BB BB BC BB BC BD BE BF C0 C1 C2 C3 C4 C5 | | | | | |
| B5 B6 B7 Fan output when snowfall sensor input is "yes" B8 Fan output when snowfall sensor input is "yes" E9 BA BB EB EC BD ED ED EE BF C0 C1 F1 C2 F2 C3 C3 C4 C5 F5 | | B1 | | E1 | |
| B5 B6 B7 Fan output when snowfall sensor input is "yes" B8 Fan output when snowfall sensor input is "yes" E9 BA BB EB EC BD ED ED EE BF C0 C1 F1 C2 F2 C3 C3 C4 C5 F5 | <u>↑</u> | B2 | | E2 | |
| B5 B6 B7 Fan output when snowfall sensor input is "yes" B8 Fan output when snowfall sensor input is "yes" E9 BA BB EB EC BD ED ED EE BF C0 C1 F1 C2 F2 C3 C3 C4 C5 F5 | ļ | | | | |
| B5 B6 B7 | ≧ | | | | |
| B6 B7 Fan output when snowfall sensor input is "yes" B8 Fan output when snowfall sensor input is "yes" E9 B9 BA BB EB BC BD BE BE BF C0 C1 C1 C2 C3 C3 C4 C5 F3 C4 C5 | | | | | |
| B7 B8 Fan output when snowfall sensor input is "yes" E9 BA BB BC BC BD BE BF C0 C1 C1 C2 C3 C4 C5 BC BC C5 BC C5 BC C7 E7 E8 E7 E8 E8 E9 EA EB EC ED EE EE EF F0 F1 C2 F2 C3 C4 C5 F3 C4 C5 F5 | | | | | |
| B8 | | | | | |
| B9 BA BB BC BD BE BF C0 C1 C2 C3 C4 C5 BD BC F1 C2 C3 C4 C5 BB BC | | В/ | | E/ | |
| BA BB BC BC BD BE BF C0 C1 F1 C2 C3 F3 C4 C5 F5 | | В8 | | | |
| BB BC BD BC BD ED BE EE BF Gas demand flow volume rated value EF C0 F0 C1 F1 C2 F2 C3 F3 C4 F4 C5 F5 | | В9 | | E9 | |
| BC BD EC BB BE EE BF Gas demand flow volume rated value EF C0 F0 C1 F1 C2 F2 C3 F3 C4 F4 C5 F5 | | BA | | EA | |
| BC BD EC BB BE EE BF Gas demand flow volume rated value EF C0 F0 C1 F1 C2 F2 C3 F3 C4 F4 C5 F5 | | BB | | EB | |
| BD BE BF Gas demand flow volume rated value EF C0 C1 F1 F2 C3 C3 C4 C5 F5 F5 | _ | | | | |
| BE BF Gas demand flow volume rated value EF C0 F0 C1 F1 C2 F2 C3 F3 C4 F4 C5 F5 | β | | | | |
| BF Gas demand flow volume rated value EF C0 F0 C1 F1 C2 F2 C3 F3 C4 F4 C5 F5 | + | | | | |
| C0 F0 C1 F1 C2 F2 C3 F3 C4 F4 C5 F5 | | | Gas demand flow volume rated value | | |
| C1 F1 C2 F2 C3 F3 C4 F4 C5 F5 | | | Gas demand how volume rated value | | |
| C2 F2 C3 F3 C4 F4 C5 F5 | | | | | |
| C3 F3 F4 F5 | | | | | |
| C4 F4 F5 | | | | | |
| C5 F5 | | | | | |
| | | | | | |
| C6 | | | | | |
| | | C6 | | F6 | |
| C7 Outdoor unit sequential startup within the system | | C7 | | F7 | |
| C8 F8 | | C8 | - y | F8 | |
| C9 F9 | | | | | |
| CA FA | | | | | |
| | | | | | |
| CB FB | | | | | |
| CC FC | | | | | |
| CD FD | | | | | |
| CE FE | | | | | |
| CF FF | | CF | | FF | |

(The default value is the reference value. Subject to amendment without prior notice.)

\bigcirc Indoor Unit Setting: No. 6 (Level 0) $< \lceil n \rceil \mid 0 \mid 0 \mid 5 \mid >$

Key operation is used for indoor unit settings (operation impossible when connecting the water heat exchanger).

1) Indoor unit setting display (Level 0)

Shows menu selected indoor unit status display.

5 E E 1 1 n

2) Outdoor unit setting item select operation (Level 1)

Pressing the SET (S007) key in the indoor unit setting display mode activates the following display.

(Occurs only upon completion of initial communication)

Example: [1 1 1 (Example: Indoor No. 1 unit, data code 1, with gas tube valve)

Operating the UP (S005) and DOWN (S006) keys in this mode makes it possible to select setting categories. Pressing the HOME (S004) key or conducting no operations for 10 minutes activates a return to the HOME display.

3) Outdoor unit setting operation (Level 2)

Setting start operation method : Press the SET (S007) key for one second in the setting data code select

mode.

This activates the forced setting in progress display. (TEST/WARNING

LED light)

Setting change operation method: After entering the setting start operation mode, operating the UP (S005)

and DOWN (S006) keys make it possible to change the setting details

of the selected setting categories.

Setting confirm operation method: After entering the setting start operation or setting change operation

completed, press the SET (S007) key for one second. This cancels the forced setting in progress display, returning to indoor unit setting item

select operation. (TEST/WARNING LED off)

operation returns operation to normal."

(Setting details will not be cancelled when pushing the HOME (S004) key for more than 1 second during indoor unit setting item select operation.)

4) Outdoor unit setting list

| | Data code | Data | Remarks |
|--|--|---------------------------------------|---|
| | 1 | Indoor unit setting 1 (indoor unit 1) | 0/1 (Gas tube valve present/absent) |
| | 2 | Indoor unit setting 2 | 0= Lowest priority to 4= Highest priority |
| | 3 | Indoor unit setting 3 | 0/1 (Normal/Drain pump intermittent control) |
| | 4 | Indoor unit setting 4 | 0/1 (Normal/Drain pump continuous control) |
| | 5 | Indoor unit setting 5 | 0/1 (Normal/No cool air prevention control with heater thermostat-off) |
| | 6 | Indoor unit setting 6 | 0/1 (Normal/No air speed control with heater thermostat-off) |
| 1 | 7 | Indoor unit setting 7 | 0/1 (Normal/No heater high-pressure avoidance control) |
| -Down | 8 | Indoor unit setting 8 | 0/1 (Normal/Heater stop indoor frost prevention control) |
| Ň | 9 | Indoor unit setting 9 | 0/1 (Normal/No refrigerant discharge control with heater thermostat-off) |
| | Α | Indoor unit setting A | 0/1 (Normal/Air speed lower limit with heater thermostat-on LL) |
| | В | Indoor unit setting B | 0 to 8 (Cooling indoor fan odor compensation) |
| | С | Indoor unit setting C | 0/1 (Normal/Air speed select when dry thermostat off LL ↔ stop) |
| | D | Indoor unit setting D | 0 to 120 (Heating thermostat on upper limit:0,4,480step) |
| | E | Indoor unit setting E | 0 to 120 (Heating thermostat on lower limit:0,4,480step) |
| F Indoor unit setting F 0 to 120 (Initial heating discharg | | Indoor unit setting F | 0 to 120 (Initial heating discharge:0,4,480step) |
| _ | G | Indoor unit setting G | 0 to 120 (Initial cooling thermostat on:0,4,480step) |
| Up→ | H Indoor unit setting H 0 to 120 (Heating high pressure avoidance:0,4,480step) | | 0 to 120 (Heating high pressure avoidance:0,4,480step) |
| + | I | Indoor unit setting I | 0 to 120 (Cooling thermostat on lower limit:0,4,480step) |
| | J | Indoor unit setting J | 0 to 120 (Heating thermostat off:0,4,480step) |
| | K | Indoor unit setting K | 0 to 120 (Cooling thermostat off oil recovery:0,4,480step) |
| | L | Indoor unit setting L | -35 to 92 (Cooling discharge temperature:0= depending on model type, -35 to 92°C) |
| | N | Indoor unit setting N | -35 to 92 (Heating discharge temperature:0= depending on model type, -35 to 92°C) |

® Forced engine rpm setting No. 08 (Level 0) < n a 0 B >

Forced setting of setting engine rpm is possible.

1) Forced engine rpm setting display (Level 0)

Displays selection of the forced engine rpm setting at the menu.

5 E E r P n

2) forced engine rpm setting (Level 1)

Pressing the SET (S007) key in the forced engine rpm setting display mode activates the following display cycle, which is repeated at 1-second intervals.

| ł | 0. | -{ | 4 | | (Example: | forced | engine | rpm= | 1400min ⁻¹) | į |
|---|----|----|---|--|-----------|--------|--------|------|-------------------------|---|
| | | | | | | | | | | |

12. 056 (Example: Compressor inlet pressure=0.56MPa)
13. 056 (Example: Compressor outlet pressure=0.56MPa)

3) Forced engine rpm setting operation (Level 2)

Start operation method : Press the SET (S007) key for one second when forced engine rpm has not been

set. This will fix the set engine rpm at the forced engine rpm. The forced setting in progress display appears during this time. (TEST/WARNING LED light)

Change operation method: Operating the UP (S005) and DOWN (S006) keys makes it possible to change

the setting values.

End operation method : Press the SET (S007) key for one second when the forced engine rpm is set.

This cancels the forced setting in progress display, returning to forced setting

select operation. (TEST/WARNING LED off)

4) Other

Setting range : From the lowest to the highest rpm in that machine's control status, measured in

100 rpm units.

Clutch : Moves to clutch engaged rpm during clutch work, conducting clutch engaged

operation.

Rotation restriction : To protect the compressor, if the compressor inlet pressure is below 0.05MPa,

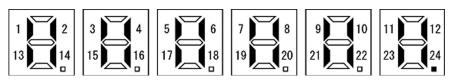
setting rotation's upper limit is set to 1400min⁻¹.

- 9 Indoor Unit Status Display: No. 9 (Level 0) < n 2 2 2 >
 - Displays of connected indoor unit status.

Also possible to activate forced thermostat-off settings for specific indoor units.

- 1) Indoor unit status display (Level 0)
 Shows menu selected indoor unit status display.
 - (n 5 E 5
- 2) Indoor unit thermostat status display (Level 1)

In the indoor unit display mode, pressing the SET (S007) key displays the indoor unit thermostat status.



(Example: No. 1 - 24 units connected) Note: 1 dot at lower right

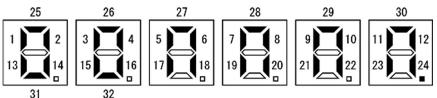
Lit : Thermostat on unit

Flashing: • 1-sec. cycle flashing indicates thermostat-off unit numbers

• 0.5-sec. cycle flashing indicates forced thermostat-off status unit numbers

Display examples

No. 1 to 32 units connected



Note: 1 dot at lower right

1 to 12 units from upper left to upper right of vertical line

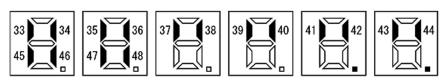
13 to 24 units from lower left to lower right of vertical line

25 to 30 units from top left to top right of horizontal line

31 units, 32 units from bottom left horizontal line

Operate the UP (S005) and DOWN (S006) keys.

No. 33 to 48 units connected



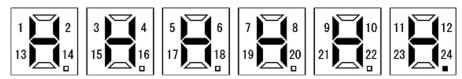
Note: 2 dots at lower right

33 to 44 units from upper left to upper right of vertical line

45 to 48 units from lower left to lower right of vertical line

3) Indoor unit forced thermostat off setting (Level 2)

Press the SET (S007) key during indoor unit thermostat status display.



(Example: No. 1 - 24 units connected) Note: 1 dot at lower right

Lit : Normal status unit

Flashing: • 1-sec. cycle flashing indicates thermostat-off unit numbers

• 0.5-sec. cycle flashing indicates forced thermostat-off status unit numbers

• High speed flashing indicates selected unit to perform setting

Setting unit

Forced thermostat-off setting method: Press the SET (S007) key for one second when forced thermostat-off

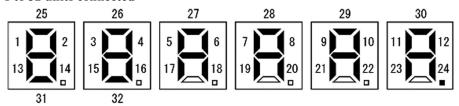
is not set. (TEST/WARNING LED light)

Forced thermostat-off release method: Press the SET (S007) key for one second when forced thermostat-off

is set. (TEST/WARNING LED off)

Display examples

No. 1 to 32 units connected



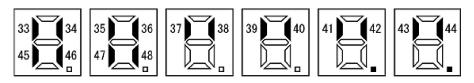
Note: 1 dot at lower right

1 to 12 units from upper left to upper right of vertical line 13 to 24 units from lower left to lower right of vertical line 25 to 30 units from top left to top right of horizontal line 31 units, 32 units from bottom left horizontal line

Operate the UP (S005) and DOWN (S006) keys.

If the number exceeds 32 units, automatically No. 33 to 48 units are displayed.

No. 33 to 48 units connected



Note: 2 dots at lower right

33 to 44 units from upper left to upper right of vertical line

45 to 48 units from lower left to lower right of vertical line

Note: The example above displays up to 48 units, but the number of indoor units that can be connected is restricted separately by each model.

- Monitial Setting: No. 10 (Level 0) < n a 10 | Setting | No. 10 (Level 0) < n a 10 | No. 20 | No. 20
 - 1) Initial setting display (Level 0)

 Displays selection of the initial setting at the menu.

 | F | | F | E
 - 2) Initial setting item select operation (Level 1)

Operating the UP (S005) and DOWN (S006) keys in this mode makes it possible to select the settings for system address, outdoor unit address, number of outdoor unit connected, number of indoor unit connected, format, gas type, old refrigerant indoor unit compliance, engine, heating automatic address, and cooling automatic address.

| | Display | Function |
|--------------|-------------|--|
| | 0 0 5 0 1 | System address setting |
| | 5 u b 0 0 | Outdoor unit address setting (W-Multi only) |
| | | Number of outdoor units connected setting (W-Multi only) |
| | | Number of indoor units connected setting |
| | 1 1 1 1 1 1 | Outdoor unit model displays |
| | 5 R S 0 2 | Gas type setting |
| | rEF 01 | Refrigerant setting (must not be amended) *1 |
| 4D | 5 E n 0 1 | Generator setting |
| †Down ↓Up | L - [0 0 | Model setting 1 (must not be amended) *1 |
| , | 2 - 3 00 | Model setting 2 (must not be amended) *1 |
| | For Ol | Destination setting 1 (must not be amended) *1 |
| | 00 0 0 | Hot water setting |
| | 0 1 1 0 0 | Oil change time display setting |
| | 50000 | Single-phase setting |
| | PIPE | Tube connection confirmation (W-Multi only) |
| | H RddC | Heater auto-address setting |
| | | Cooler auto-address setting |

^{*1} Settings \(\bar{\mathbb{E}} \bar{\mathbb{F}} \), \(\bar{\mathbb{L}} - \bar{\mathbb{E}} \) and \(\bar{\mathbb{F}} \bar{\mathbb{E}} \) are set at the time of shipment and must not be amended as a basic principle. If the values differ after replacing the non-volatile memory or clearing the memory, etc., reset the values to those listed above.

3) System address setting (Level 2)

Rejection conditions : Not accepted during indoor operation : Press the SET (S007) key for one second. Setting start operation method

Setting change operation method: After entering the setting start operation mode, operating the UP (S005)

and DOWN (S006) keys makes it possible to change the setting values.

(TEST/WARNING LED light)

0 2 : When pressing the UP (S005) key o u t Example: out 01 : When pressing the DOWN (S006) key

Setting confirm operation method: After entering the setting start operation or setting change operation

completed, press the SET (S007) key for one second. (TEST/

WARNING LED off)

Setting cancel operation method

: Press the HOME (S004) key for one second before confirming setting.

Setting range : 01 to 31

4) Number of connecting indoor units setting (Level 2)

0 1

Rejection conditions : Not accepted during indoor operation Setting start operation method : Press the SET (S007) key for one second.

Setting change operation method : After entering the setting start operation mode, operating the UP (S005)

and DOWN (S006) keys makes it possible to change the setting values.

(TEST/WARNING LED light) When pressing the UP (S005) key When pressing the DOWN (S006) key

0 0 ı n Setting confirm operation method: After entering the setting start operation or setting change operation

completed, press the SET (S007) key for one second. (TEST/

WARNING LED off)

Setting cancel operation method

Setting range

Example:

: Press the HOME (S004) key for one second before confirming setting. : 00

Not set 01 to 48

Number of indoor unit connected in same system 1 to 48 units*

(*) The number of indoor units that can be connected is restricted separately by each model.

5) Gas type setting (Level 2)

Rejection conditions : Not accepted during indoor operation Setting start operation method : Press the SET (S007) key for one second.

Setting change operation method : After entering the setting start operation mode, operating the UP (S005)

and DOWN (S006) keys makes it possible to change the setting values.

(TEST/WARNING LED light)

6 8 5 When pressing the UP (S005) key Example: 685 0 0 When pressing the DOWN (S006) key

Setting confirm operation method: After entering the setting start operation or setting change operation

completed, press the SET (S007) key for one second. (TEST/

WARNING LED off)

: Press the HOME (S004) key for one second before confirming setting. Setting cancel operation method Setting range

: 00 to 0F

0 Propane G31 6 R S 0 0 1 5 R S | 0 1 2 Natural gas G20 6 R S 8 2 G R S 0 3 3 Natural gas G25 4 685 84 6) Refrigerant setting (Level 2)

Rejection conditions : Not accepted during indoor operation Setting start operation method : Press the SET (S007) key for one second.

Setting change operation method: After entering the setting start operation mode, operating the UP (S005)

and DOWN (S006) keys makes it possible to change the setting values.

(TEST/WARNING LED light)

Setting confirm operation method: After entering the setting start operation or setting change operation

completed, press the SET (S007) key for one second. (TEST/

WARNING LED off)

Setting cancel operation method

: Press the HOME (S004) key for one second before confirming setting.

Setting range

: 00 to 02

| 0 | Not set | FEF 00 |
|---|---------|-----------|
| 1 | Normal | r E F D 1 |
| 2 | • | • |

7) Generator setting (Level 2)

Rejection conditions : Not accepted during indoor operation Setting start operation method : Press the SET (S007) key for one second.

Setting change operation method : After entering the setting start operation mode, operating the UP (S005)

and DOWN (S006) keys makes it possible to change the setting values.

(TEST/WARNING LED light)
: When pressing the UP (S005) key

Setting confirm operation method: After entering the setting start operation or setting change operation

completed, press the SET (S007) key for one second. (TEST/

WARNING LED off)

Setting cancel operation method

: Press the HOME (S004) key for one second before confirming setting.

Setting range : 00 to 03

| 0 | Not set | 5 E n 0 0 |
|---|--------------|-------------|
| 1 | • | • |
| 2 | • | • |
| 3 | No generator | 6 E n 0 3 |

8) Model type 1 setting (Level 2)

Rejection conditions : Not accepted during indoor operation Setting start operation method : Press the SET (S007) key for one second.

Setting change operation method : After entering the setting start operation mode, operating the UP

(S005) and DOWN (S006) keys makes it possible to change the setting

values. (TEST/WARNING LED light)

Setting confirm operation method: After entering the setting start operation or setting change operation

completed, press the SET (S007) key for one second. (TEST/

WARNING LED off)

Setting cancel operation method

: Press the HOME (S004) key for one second before confirming setting.

Setting range : 00 to 02

| 0 | 3WAY MULTI | L - E 0 0 |
|---|------------|-------------|
| 1 | • | • |
| 2 | • | • |

9) Model 2 setting (Level 2)

Rejection conditions : Cannot be accepted when the indoor unit is operating.

Operations to start settings : Press the SET (S007) key for one second.

Operations to amend settings : After performing the operations to start the settings, press the UP

(S005) and DOWN (S006) keys to change the set values. (The TEST/

WARNING LED will be illuminated.)

Setting confirm operation method: Press the SET (S007) key for one second after starting the settings

or after amending the settings. (The TEST/WARNING LED will be

extinguished.)

Setting cancel operation method : Press the HOME (S004) key for one second before entering the

settings.

Setting range : 00 to 07

0 Standard 2|-|3| |0|0| W MULTI 1 2 - 3 0 1 2 **3WAY MILTI** 2 - 3 0 2 3 (No current setting) 2 - 3 0 3 4 Standard Panasonic model 2-3 84 5 W-Multi Panasonic model 2 - 3 0 5 6 3WAY Panasonic model 2 - 3 0 6 7 (No current setting) 2 - 3 0 7

10) Region setting (Level 2)

Rejection conditions : Not accepted during indoor operation Setting start operation method : Press the SET (S007) key for one second.

Setting change operation method : After entering the setting start operation mode, operating the UP

(S005) and DOWN (S006) keys makes it possible to change the setting

values. (TEST/WARNING LED light)

Setting confirm operation method: After entering the setting start operation or setting change operation

completed, press the SET (S007) key for one second. (TEST/

WARNING LED off)

Setting cancel operation method :

: Press the HOME (S004) key for one second before confirming setting.

Setting range : 00 to 02

| 0 Europe F a r C C |
|--------------------|
|--------------------|

11) Hot water setting (Level 2)

Rejection conditions : Not accepted during indoor operation Press the SET (S007) key for one second. Setting start operation method

Setting change operation method : After entering the setting start operation mode, operating the UP

(S005) and DOWN (S006) keys makes it possible to change the setting

values. (TEST/WARNING LED light)

0 4 0 0 1 : When pressing the UP (S005) key Example: 0 9 0 0 0

: When pressing the DOWN (S006) key

Setting confirm operation method: After entering the setting start operation or setting change operation

completed, press the SET (S007) key for one second. (TEST/

WARNING LED off)

Setting cancel operation method : Press the HOME (S004) key for one second before confirming setting.

Setting range : 00 to 99

| 0 | No discharge | 090 |
|----|--|--------|
| 1 | Hot water discharge thermostat off temperature | 04001 |
| ~ | to | ~ |
| 99 | • | 040 99 |

12) Oil change display setting (Level 2)

Rejection conditions Not accepted during indoor operation : Press the SET (S007) key for one second. Setting start operation method

After entering the setting start operation mode, operating the UP Setting change operation method:

(S005) and DOWN (S006) keys makes it possible to change the setting

values. (TEST/WARNING LED light)

When pressing the UP (S005) key Example: 0 0 0 (5 When pressing the DOWN (S006) key

Setting confirm operation method: After entering the setting start operation or setting change operation

completed, press the SET (S007) key for one second. (TEST/

WARNING LED off)

: Press the HOME (S004) key for one second before confirming setting. Setting cancel operation method

: 00 to 03 Setting range

| 0 | Inspection and error | 0 1 |
|---|----------------------|-----------|
| 1 | None | |
| 2 | Error only | 0 (- 0 2 |
| 3 | Inspection only | 0 (- 0 3 |

13) Single phase setting (Level 2)

Rejection conditions : Not accepted during indoor operation Setting start operation method : Press the SET (S007) key for one second.

Setting change operation method : After entering the setting start operation mode, operating the UP

(S005) and DOWN (S006) keys makes it possible to change the setting

values. (TEST/WARNING LED light)

When pressing the UP (S005) key Example: 5 o u When pressing the DOWN (S006) key

Setting confirm operation method: After entering the setting start operation or setting change operation

completed, press the SET (S007) key for one second. (TEST/

WARNING LED off)

Setting cancel operation method : Press the HOME (S004) key for one second before confirming setting.

00 to 01 Setting range

0 500 00 1 5 o u 0 1 Single phase

14) Tube connection confirmation (Level 2) < Cannot be set if not W MULTI>

Rejection conditions : Indoor unit operation in progress, cooling automatic addressing in

progress

Setting start operation method : Push the SET (S005) key for 1 second.

(Forced / error LED light)

Setting change operation method : Automatic completion. Press the SET (S005) key for one second when

turning off.

(Forced / error LED off)

15) Heating automatic address setting (Level 2)

Rejection conditions : Not accepted during indoor operation Setting start operation method : Press the SET (S007) key for one second.

(TEST/WARNING LED light)

Setting change operation method : Automatic completion. Press the SET (S007) key for one second when

turning off.

(TEST/WARNING LED off)

Automatic address setting status is successively displayed as shown below.

The meaning of the numbers is as follows.

| 0: Automatic address start setup | H B d | 0 |
|---|-------|-----|
| 1: Indoor unit automatic address setup wait | H B d | - { |
| 2: Engine operation in progress | H B d | 5 |
| 3: Indoor unit checking in progress | H B d | 3 |
| 4: Address setting in progress | H B d | 닉 |
| 5: Setting complete | H R d | 5 |

16) Cooling automatic address setting (Level 2)

Rejection conditions : Not accepted during indoor operation Setting start operation method : Press the SET (S007) key for one second.

(TEST/WARNING LED light)

Setting change operation method : Automatic completion. Press the SET (S007) key for one second when

turning off.

(TEST/WARNING LED off)

Automatic address setting status is successively displayed as shown below.

The meaning of the numbers is as follows.

| 0: Automatic address start setup | [. A d | 0 |
|---|-----------|---|
| 1: Indoor unit automatic address setup wait | E. A d | 1 |
| 2: Engine operation in progress | E. A d | 5 |
| 3: Indoor unit checking in progress | E. A d | 3 |
| 4: Address setting in progress | E. A d | 4 |
| 5: Setting complete | E. A d | 5 |

① Date Display: No. 11 (Level 0) < n 2 1 1 >

Display of the current date

Key operation is used to display the time and set the date.

1) Date display (Level 0)

Displays the date.

Example: | | | | | | | | | (Example: April 1, 2012)

2) Date display (Level 1)

In the date display mode, pressing the SET (S007) key activates the next display.

Example: | | | | | | | | | | | | | (Example: April 1, 2012)

In this state, pressing the UP (S005) and DOWN (S006) keys toggles between the dates and time displays.

| | Display | Function |
|-------|---------|--------------|
| ↑DOWN | 12.0401 | Date display |
| ↓UP | 110625 | Time display |

3) Clock setting (Level 2)

In the date display or time display mode, pressing the SET (S007) key for one second or more activates the clock setting function.

Example: | | | | | | | | | | | | | | (Example: Year 2012)

| Item | Data name | Display examples | Remarks |
|------|--------------|------------------|------------|
| 1 | Year | 1 12 | 2012 |
| 2 | Month | 2. 0 4 | April |
| 3 | Day | 3 B | 1 |
| 4 | Hour | 4 11 | 11:00 a.m. |
| 5 | Minutes | 5. 0.6 | 6 min. |

Each time the SET (S007) key is pressed, the set items is confirmed, and the set item moves to the next one in the order shown. The set item returns to Item 1 after Item 5.

As each item is displayed, operating the UP (S005) and DOWN (S006) keys makes it possible to change the value settings.

When clock is set, the clock stops and the number of seconds is set to 0.

When completing the clock setting, push the HOME (S004) key for 1 second.

This clock may be set for up to year 2099 (with adjustments for leap years, it may be set for beyond that year as well).

When the power supply is turned on, detecting a halt in RTC oscillation causes the clock to be set at the initial value.

(February 1, 2003 - 12:00:00)

(8) Ignition Timing Check and Adjustment

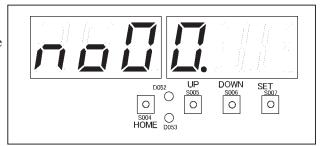
① Preparation for work

Turn off remote controllers for all indoor units. Confirm outdoor units have stopped.

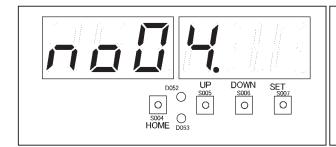
② Distributor mode setting

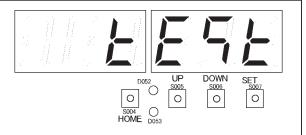
Set the distributor mode by selecting "E SPRr" from the "no 04" test run forced setting display.

1) Press the HOME key (S004) for one second or more

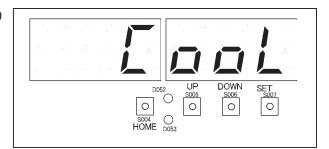


2) Press the UP (S005) or DOWN (S006) key, displaying the menu item numbers. Select menu item " n a 0 4" in the figure below. The display " E E 5 E" (figure below) will appear.



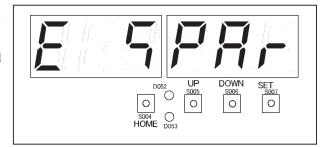


3) Press the SET key (S007). " [o o L " (right figure) will bedisplayed. The LEVEL LED (D053) will light.



4) Press the UP (S005) or DOWN (S006) key to display " E 「FR」" (right figure). Press the SET key (S007) for one second or more.

The TEST/WARNING LED (D052) will light, and the distributor mode will be set.

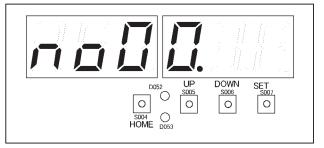


③ Start test run and set engine rotational speed
Start test run, and select " ¬ □ □ □ □ □ " forced engine rpm setting, and set 800 [min⁻¹].

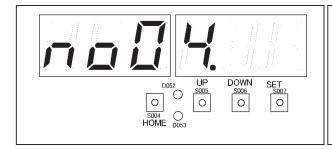
Start test run.

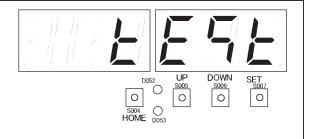
1) Press the HOME key (S004) for one second or more.

Menu item number " $\neg \neg \neg \Box \Box \Box$ "(right figure) will be displayed.



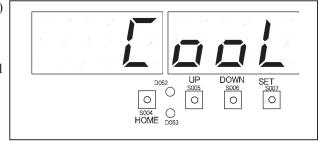
2) Press the UP (S005) or DOWN (S006) key, displaying the menu item numbers. Select menu item " ¬ • • • • • in the figure below. The display " <code>E F F E</code> " (figure below) will appear.





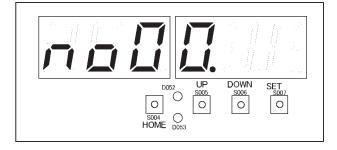
3) Press the SET key (S007). " [aal "(right figure) will be displayed. The LEVEL LED (D053) will light.

Press the SET key (S007) for one second or more. The TEST/WARNING LED (D052) will light, and the test run will start.

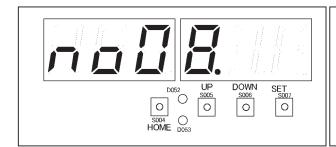


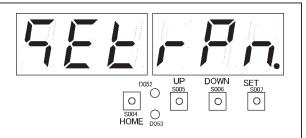
Set the engine rotational speed to 800 [min⁻¹].

4) Press the HOME key (S004) for one second or more.



5) Press the UP (S005) or DOWN (S006) key, displaying the menu item numbers. Select menu item " $\neg \circ \square$ \square " in the figure below. The display " $\neg \circ \square$ \square " (figure below) will appear.





6) Press the SET key (S007). The LEVEL LED (D053) will light, and the status with the engine rotating at the forced (set) speed will be displayed at one-second intervals, as shown below.

| Display | Item |
|---------------------|---|
| 10.1400 (10.1400) | Forced engine rotational speed (example: 1400 min ⁻¹) |
| 111400 (11.1400) | Engine rotational speed (example: 1400 min ⁻¹) |
| 12.0.56 (12.0.56) | Compressor inlet pressure (Example: 0.56MPa) |
| 1 B 0 5 5 (13.0.56) | Compressor outlet pressure (Example: 0.56MPa) |
| 15. 85.5 (15.85.0) | Compressor outlet temperature (Example: 85.0°C) |

7) In this state, press the UP (S005) or DOWN (S006) key to set the engine rotational speed to 800 [min⁻¹]. Press the SET key (S007) for one second or more, to confirm the set engine rotational speed. The TEST/WARNING LED (D052) will light.

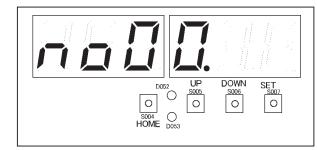
Caution: The forced engine rpm can be set within the range from the minimum speed to the maximum speed governed by the engine, in units of 100 revolutions.

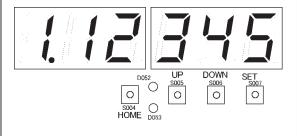
4 Ignition timing check

When the operation conditions stabilize, select " $n \in \mathbb{Q}$ 0 operation data display, and display " $n \in \mathbb{Q}$ 0 operation timing). Check that this value is the value shown in table 1.

1) Press the HOME (S004) key for one second or more. Menu item number " n n 0 0 0 0 " (figure below) will be displayed. The TEST/WARNING LED (D052) will light. After that, " 112345 " (as in the example below where the engine has 12345 operating hours) will be displayed. The TEST/WARNING LED (D052) will light. In this state, press the SET (S007) key.

The LEVEL LED (D053) will light.





2) Press the UP (S005) or DOWN (S006) key to display " 5 \(\mathbb{I} \) " (engine ignition timing). Check that this value is the one shown in table 1 below.

Table 1 Ignition timing adjustment value: at 800 [min⁻¹] (K21, K25).

| | G (propane) | G(13A•12A) |
|-----------------|-------------|------------|
| K21, K25 engine | 10°BTDC | 10°BTDC |

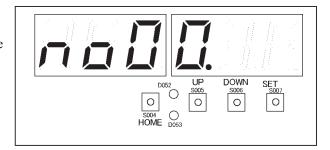
3) Attach the timing light on the high-tension wire for the no. 1 cylinder of the engine, and check the ignition timing (refer to table 1 above). Compare it to the " 5 \(\mathbb{I} \) " (engine ignition timing) value displayed in 2) above.

© Correction for distorted amount

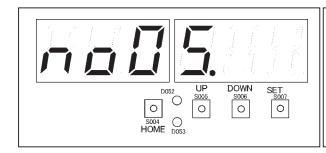
If the value is different than that displayed by "50" (engine ignition timing) set in item (4) above, select "80" (ignition timing offset) in "005" engine settings, and correct for the distorted amount.

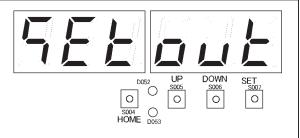
1) Press the HOME key (S004) for one second or more.

Menu item number " $\neg \neg \neg \Box \Box \Box$ "(right figure) will be displayed.



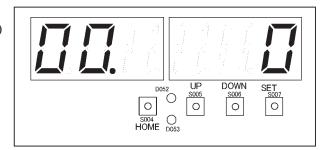
2) Press the UP (S005) or DOWN (S006) key, displaying the menu item numbers. Select menu item " ¬ • • • 5 " in the figure below. The display " • • • • • • (figure below) will appear.





3) In this state, press the SET key (S007).

The display will change to " To To Tright figure) and the LEVEL LED (D053) will light.



4) Next, press the UP (S005) or DOWN (S006) key, to display " 🖁 🖁 " (ignition timing offset).

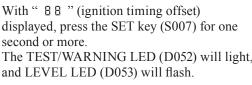
5) Make the correction

Correction example a)

The adjustment value is 10° BTDC, but the observed value was 8° BTDC. Press the UP (S005) or DOWN (S006) key to set a correction of ± 2 in relation to the current " $\exists \exists$ " (ignition timing offset) value.

Display the current " & & " (ignition timing offset) value, and check it. The current value is zero (0). The display for " 🖁 🖁 🗓 " will be as shown at

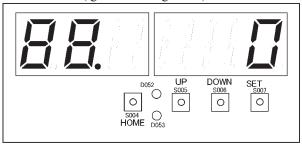
ii) With " 🖁 🖁 " (ignition timing offset) displayed, press the SET key (S007) for one second or more. The TEST/WARNING LED (D052) will light,

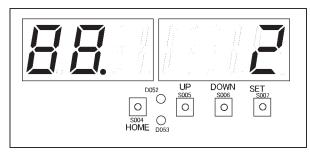


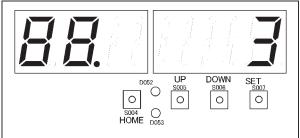
iii) Press the UP (S005) or DOWN (S006) key to set a correction of ± 2 in relation to the current value checked in "ii)." The display will show "88 2" (right

figure).

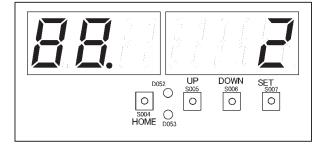
Caution: The display example at right is an example for when the current value checked in "i)" is zero (0). If the current value is "1" and a ± 2 correction is set in relation to that value, the value will become "3" after the setting is made. The display will show " BB 3" (figure below right).







iv) With " BB 2" (right figure) displayed, press the SET key (S007) for one second or more. The TEST/WARNING LED (D052) will go out, and LEVEL LED (D053) will light. The ignition timing offset mode will be cancelled, and the setting process will be ended.



Correction example b)

The adjustment value is 10°BTDC, but the observed value was 13° BTDC. Press the UP (S005) or DOWN (S006) key to set a correction of <u>-3</u> in relation to the current " B B" (ignition timing offset) value.

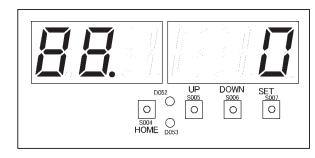
- i) Display the current " B B " (ignition timing offset) value, and check it. The current value is zero (0).

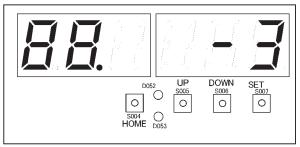
 The display for " B B B B " will be as shown at
 - The display for " $\blacksquare \blacksquare \square$ " will be as shown at right.
- ii) With " B B" (ignition timing offset) displayed, press the SET key (S007) for one second or more.
 - The TEST/WARNING LED (D052) will light, and LEVEL LED (D053) will flash.
- iii) Press the UP (S005) or DOWN (S006) key to set a correction of <u>-3</u> in relation to the current value checked in "ii)."

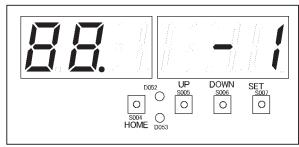
The display will show " ₿ ₿ - ∃ " (right figure).

Caution: The display example at right is an example for when the current value checked in "i)" is zero (0).

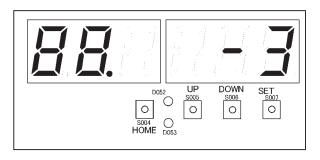
If the current value is "2" and a -3 correction is set in relation to that value, the value will become "-1" after the setting is made. The display will show " BB - + " (figure below right).







iv) With " 8 8 - 3 " (right figure) displayed, press the SET key (S007) for one second or more. The TEST/WARNING LED (D052) will go out, and LEVEL LED (D053) will light. The ignition timing offset mode will be cancelled, and the setting process will be ended.

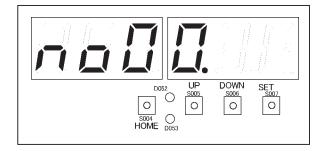


© Cancel settings

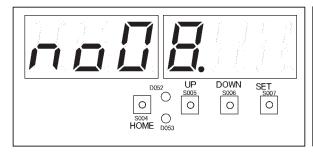
When ignition timing correction is finished, cancel the forced rotational speed setting and the distributor mode. Make sure to do this.

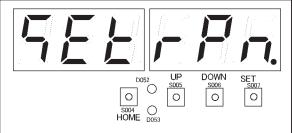
1) Press the HOME key (S004) for one second or more.

Menu item number " ¬ • • • • • • (right figure) will be displayed.



2) Press the UP (S005) or DOWN (S006) key, displaying the menu item numbers. Select menu item " n a 0 8 " in the figure below. The display " 5 E E r P n " (figure below) will appear.



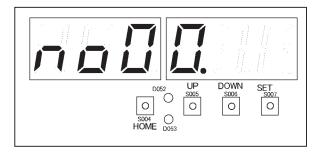


3) Press the SET key (S007). The LEVEL LED (D053) and TEST/WARNING LED (D052) will light, and the status with the engine rotating at the forced (set) speed will be displayed at one-second intervals, as shown below.

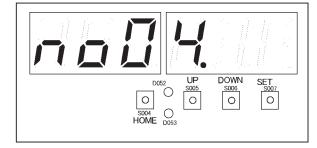
| Display | Item |
|-----------------------|---|
| + □ + 4 □ □ (10.1400) | Forced engine rotational speed (example: 1400 min ⁻¹) |
| 111400) | Engine rotational speed (example: 1400 min ⁻¹) |
| 12.0.56 (12.0.56) | Compressor inlet pressure (Example: 0.56MPa) |
| (13.0.56) | Compressor outlet pressure (Example: 0.56MPa) |
| 15. 8 5. 5 (15.85.0) | Compressor outlet temperature (Example: 85.0°C) |

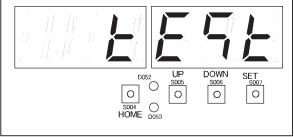
- 4) Press the SET key (S007) for one second or more. The TEST/WARNING LED (D052) will go out, and the forced rotational speed setting mode will be canceled.
- 5) Press the HOME key (S004) for one second or more.

Menu item number " $\neg \neg \neg \Box \Box \Box$ " (right figure) will be displayed.

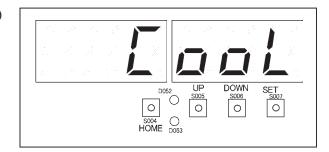


6) Press the UP (S005) or DOWN (S006) key and select menu item number " n o 0 4" The display " t E 5 t " (figure below) will appear.

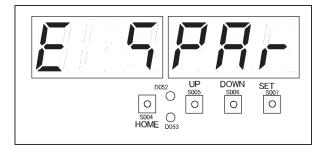




7) Press the SET key (S007). " [o o L " (right figure) will be displayed. The LEVEL LED (D053) and TEST/WARNING LED (D052) will light.



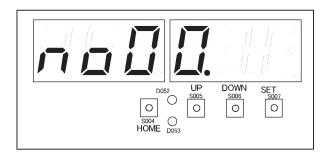
8) Press the UP (S005) or DOWN (S006) key, to display "E FRR " (right figure). Press the SET key (S007) for one second or more. The TEST/WARNING LED (D052) will go out, and distributor mode will be cancelled.



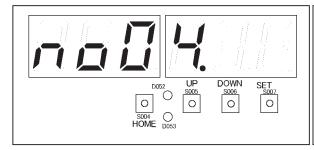
- Stop test run
 - 1) Press the HOME key (S004) for one second or more.

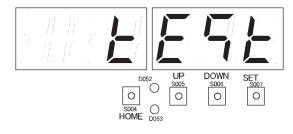
 Menu item number " a a B.B." (right figure) wil

Menu item number " $\neg \neg \neg \Box \Box \Box$ " (right figure) will be displayed.

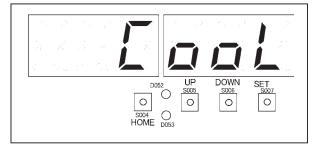


2) Press the UP (S005) or DOWN (S006) key, displaying the menu item numbers. Select menu item " ¬ • • • + * " in the figure below. The display " <code>E F F E</code> " (figure below) will appear.





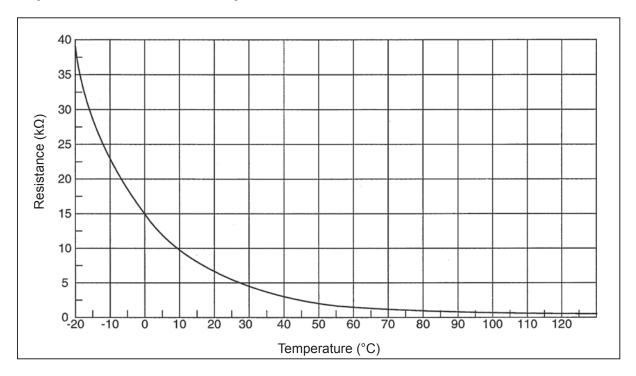
- 3) Press the SET key (S007). " [o o L " (right figure) will be displayed. The LEVEL LED (D053) and TEST/WARNING LED (D052) will light.
- 4) Press the SET key (S007) for one second or more. The TEST/WARNING LED (D052) will go out, and the test run will be stopped.



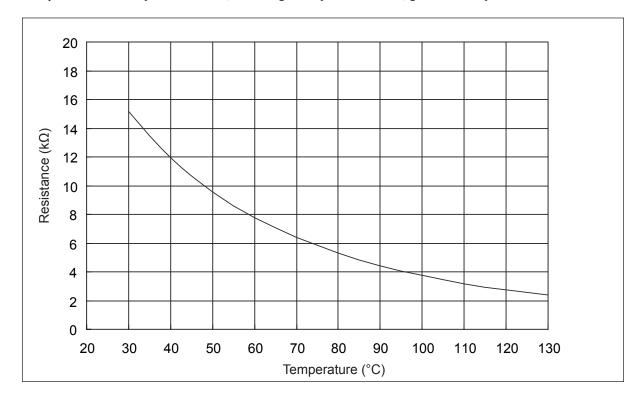
- ® Running condition check
 - 1) Make sure that no abnormal noise or vibration occurs.
 - 2) Make sure there is no looseness in the fastening parts for each unit.

(9) Thermistor characteristic graph

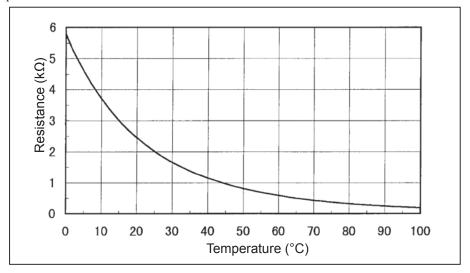
① Indoor unit heat exchanger inlet temperature sensor, indoor unit heat exchanger outlet temperature sensor, outside air temperature sensor, compressor inlet temperature sensor, outdoor unit heat exchanger inlet temperature sensor, hot water outlet temperature sensor



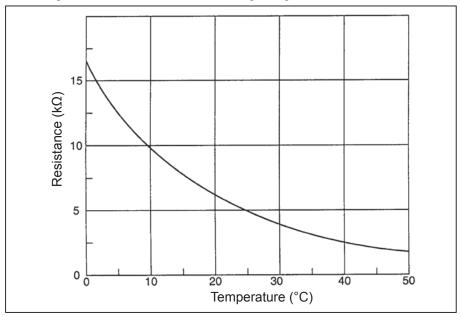
② Compressor outlet temperature sensor, exhaust gas temperature sensor, generator temperature sensor



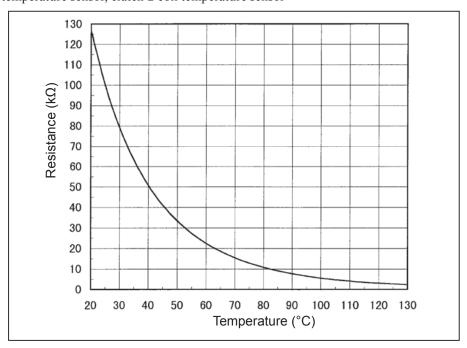
3 Coolant temperature sensor



Indoor unit intake temperature sensor, indoor unit discharge temperature sensor



© Clutch coil temperature sensor, clutch-2 coil temperature sensor



(10) Checks Prior to Automatic Addressing

* When an outdoor unit alarm is displayed, perform the following checks after troubleshooting.

| 1 | | | Yes | 2-1 | |
|------------------------------|--------------------|---|-----|-----------------------|--|
| Indoor/outdoor power source | | | No | Turn on the power | |
| 2 | | Lleve the incide/outside control wines have laid? In the con- | Yes | 2-2 | |
| Indoor/outdoor control wires | 2-1 | Have the inside/outside control wires been laid? Is there a break or disconnection of wires? | No | Wiring and connection | |
| | 2-2 | Was a high voltage (200 V AC), etc. applied to the control wire circuit? | Yes | 2-3 | |
| | 2-2 | Has a fuse on the control board blown? [Confirmation of each outdoor and indoor unit] | No | 3-1 | |
| | 2-3 | There is a problem with the wiring of the power cable and indoor/outdoor control wires. Turn off the power, check and repair faulty wiring, and then connect all indoor/outdoor control wires to the backup control board and controller. | | | |
| 3 | | Does the setting of connected indoor unit count (No. 10) | | 3-2 | |
| Outdoor settings | 3-1 | on the outdoor control board match the actual count of connected indoor units? | No | Correct the setting | |
| | | Are the indoor/outdoor control wires connected to multiple outdoor units? (Wire-linked?) | Yes | 3-3 | |
| | 3-2 | | No | 3-6 | |
| | 3-3 main board set | Is S010 (terminal resistor ON/OFF switch) on the outdoor | Yes | 3-4 | |
| | | main board set to ON for only one outdoor unit and set to OFF for all other outdoor units *1? | No | Correct the setting | |
| | 3-4 | And the are considerable as the continue for a state of a second continue of | Yes | 3-5 | |
| | 3-4 | Are there any duplicate settings for outdoor units? | No | 3-6 | |
| | 3-5 | For link wiring, set a system address for each outdoor unit in the order of 1, 2, 3, and the perform automatic addressing. | | | |
| | 3-6 | Perform automatic addressing. | | | |

^{*1:} Terminal resistor is basically "ON(SHORT)" for one unit only, but depending on the installation status can be set to "ON(SHORT)" for up to 3 units.

•2-3 Backup connectors and terminals for indoor/outdoor control wires (for communication)

| Equipment | Primary | Backup |
|------------------------|------------------------------|---|
| Outdoor Unit | CN045 (for communication) | CN046 (EMG) |
| Indoor unit | CN040(0C) | CN044(EMG) |
| System controller | Terminal block No. A7 and B7 | Terminal plate No. 3 (Indoor/outdoor backup control wire) |
| Multi-controller | Terminal plate No. 2 (U2) | Terminal block No. 3 |
| Intelligent controller | Terminal block No. 2 | Terminal block No. A6 and B6 |
| AMY adapter | JP3-A side | JP3-B side |

^{*} For a system linking wiring systems, if the systems are connected to water heat exchange unit, depending on the state of the hot / cold water, automatic address alarm may occur. If this happens, remove the link wiring and set address individually.

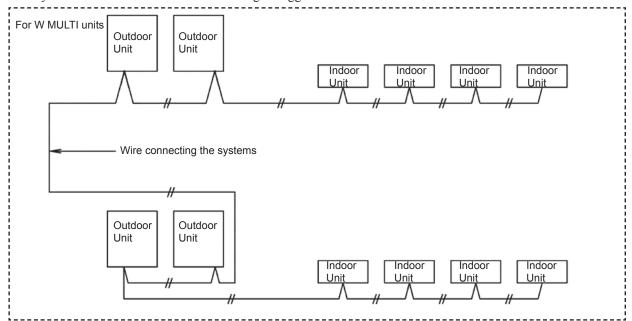
(11) Indoor/outdoor control wire connection confirmation

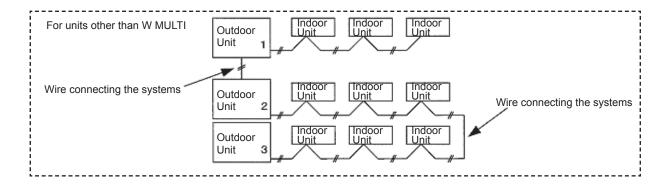
Check the control wire connection regardless of whether there is a warning or not. Before performing the check, turn off the power of all devices (including controllers) that are connected to the indoor/outdoor control wire.

| turn our the power or | | field (merading controllers) that are connected to the major/outdoor contr | 01 1111 | . |
|---|-----|--|-----------|------------|
| 1 Ground fault check | 1-1 | Measure the resistance between one end of the indoor/outdoor control wire and the point of ground screw, as well as the resistance between the other operating line end and the point of ground screw. Are both measured resistance values in $M\Omega$ unit (infinite)? | Yes | 2-1 |
| | 1-2 | Because the indoor/outdoor control wire has a ground fault, search for the loground fault. | cation | of the |
| 2 Short circuit check | 2.1 | Measure the resistance between the indoor/outdoor control wires on the terminal board of the outdoor unit. The measured resistance value is around 75 to 100Ω ? | Yes | 3-1 |
| 2-1 | 2-1 | When setting multiple "ON (SHORT)" to switches with terminal resistor, the resistance value mentioned above is 1 over number of units. *1 | No | 2-2 |
| | 2-2 | If the wiring has a short circuit, search for the location of the short circuit on toutdoor control wire. If it is open, check the terminal resistor of outdoor board, and check the wirin outdoor board to outdoor terminal board. | | |
| 3 Wire break or disconnection check | 3-1 | Measure the resistance between the indoor/outdoor control wires on the boards of all devices that are connected to the control wires. Any location with measured resistance values in $M\Omega$ units (infinite)? | Yes No | 3-2 4-1 |
| | 3-2 | Because the wiring has a break, search for the location of the break. | | |
| 4 | 4-1 | A shield wire is used as an indeer/outdoor central wire? | Yes | 4-2 |
| Shield wire check | 4-1 | A shield wire is used as an indoor/outdoor control wire? | No | 5-1 |
| | 4-2 | Only one end of the shield wire is grounded? | Yes | 5-1 |
| | 7-2 | Only one end of the shield wife is grounded: | No | 4-3 |
| | 4-3 | Ground only one end of the shield wire. | | |
| 5 Others | 5-1 | Check total wire length and the number of branch connections and connecte | d units | |

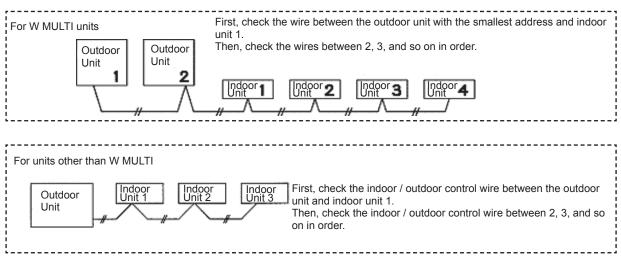
^{*1:} Terminal resistor is basically "ON (SHORT)" for one unit only, but depending on the installation status can be set to "ON (SHORT)" for up to 3 units.

- Device ground check Is earth ground securely obtained?
- If an error is found in the wiring connections, the following check procedure allows you to quickly identify the location of the error. When performing the check procedure, it is convenient if you have a drawing showing the layout of devices and wiring routes to refer to.
 - In systems that are comprised of multiple wiring systems linked together, you can quickly identify the location of the error by removing the 'link' and determining whether each individual system is good or not good. A warning in a certain system does not necessarily mean that the cause of the error is in that system. Check the indoor/outdoor control wires of all systems, since the abnormality may be in the wiring of a system other than that where the warning is triggered.

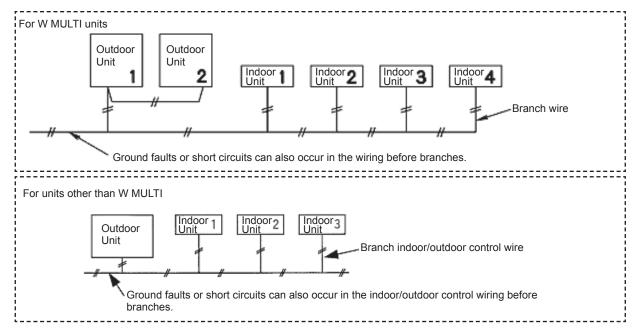




• When the wiring route is divided into segments by the terminal block of each unit, it is advisable to check the wiring connection on a segment by segment basis, starting with the segment between the outdoor unit and indoor unit 1, then the segment between the indoor units 1 and 2, and so on. This allows you to find the location of the connection failure between units.

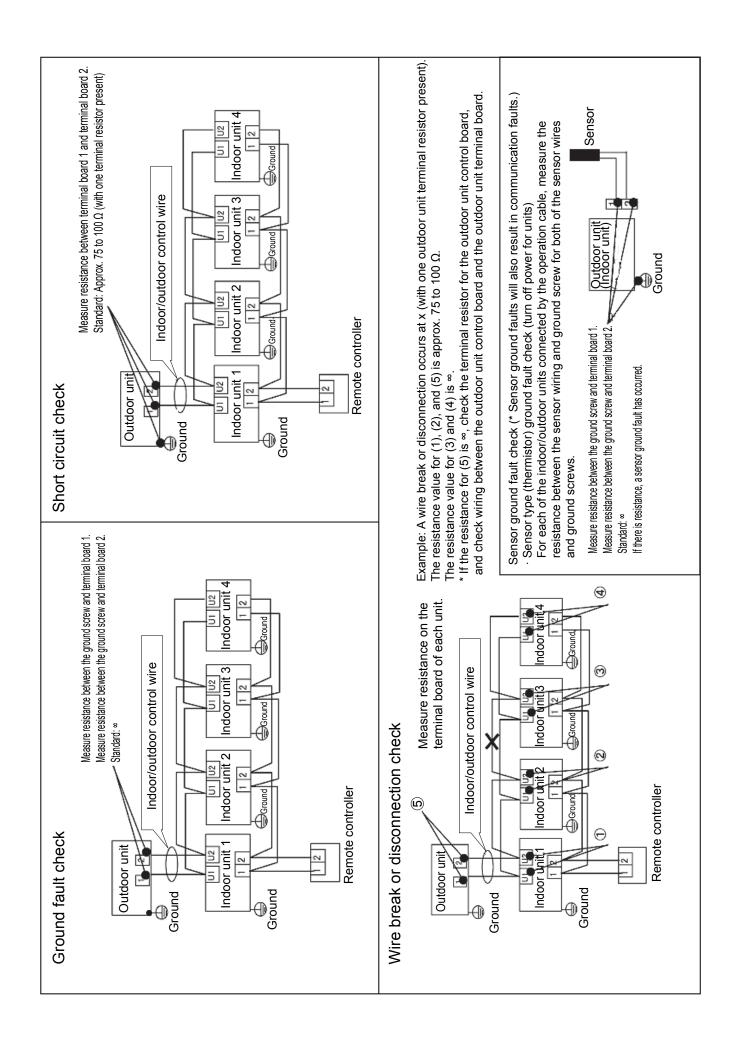


• If the device contains control wire branched from indoor/outdoor control wire, there may be failure in the indoor/outdoor control wire before branches.



- If communication error occurs, check the sensor's ground fault.
 Check sensors (thermistor) ground fault.
 Before checking, turn off the device and remove target sensor from the board before performing measurement.

| | | · · · · · · · · · · · · · · · · · · · | | |
|-------------------------|-----|--|-----|------|
| 6 Ground fault check | 6-1 | Measure the resistance between one end of the indoor/outdoor control wire and the point of ground screw, as well as the resistance between the other | Yes | Good |
| | 0-1 | operating line end and the point of the ground screw. Are both measured resistance values in $M\Omega$ unit (infinite)? | No | 6-2 |
| | 6-2 | Replace thermistor and wiring | | |



① Number units to connect

- 1) Number of units to connect
 - Number of outdoor units that can be connected
 Number of outdoor units that can be connected
 Max 30
 Number of outdoor units that can be connected
 Centralized control devices that can be connected
 Max 10
 - (* Total number of each type of devices within 1 link wiring is up to 100.)
- 2) Indoor and outdoor unit operation lines
 - Wiring Non-polar biaxial wires
 - Wire types

| Eco electrical wire code | Previous code | Name (previous name) | Applicable standard |
|--------------------------|---------------|---|-----------------------|
| EM-CEE | CVV | Heat-resistant polyethylene sheath control cable (Vinyl insulated vinyl sheath control cable) | JIS C 3401 |
| ECO120 | VCT | Heat-resistant polyethylene insulated heat-resistant polyethylene sheath cabtire round cable (Vinyl insulated vinyl cabtire cable) | JIS4501 JIS C 3312 |
| EM-ECTF | VCTF | Heat-resistant polyethylene insulated heat-resistant polyethylene sheath cabtire round cord (Vinyl cabtire round cord) | JIS C 3306 |
| EM-EEF | VVF | 600V heat-resistant polyethylene flat cable (600V vinyl insulated vinyl sheath flat cable) | JIS C 3342 |
| EM-CPEES | CPEVS | Shielded polyethylene insulated heat-resistant polyethylene sheath communication cable for city use (Shielded polyethylene insulated vinyl sheath cable for city use) | - |
| EM-K-CPEE | KPEVS | Shielded polyethylene insulated heat-resistant polyethylene sheath instrumentation cable for city use (Shielded polyethylene insulated vinyl sheath cable for city use) | JIS C 5402 |
| EM-MEE-S | MVVS | Heat-resistant polyethylene cord for use with covered microphones (Vinyl cord for use with covered microphones) | JCS4271 |

Note: Either block out the light or use UV-resistant cables if wiring is affected by ultraviolet rays (sunlight, lighting, etc.)

- Cable thickness: 0.5mm² 2mm²
- Insulated length: Maximum 1km for the entire cable length
- Precautions
 - 1. Do not lay signal cables next to power line in order to prevent miss-operations.
 - 2. Maintain a distance of 50 mm or more between the power lines of other air-conditioning units manufactured by Panasonic.
 - 3. Maintain a distance of 300 mm or more between other power lines.
 - 4. In the event of the cables needing to be laid within the above-mentioned distances, make sure one of them is enclosed in a steel power-line conduit.
 - 5. When shielded cables are in use, make sure one side is grounded.
 - 6. Do not use the same cable for signal cables and power cables. (Fig.1)
 - 7. Do not use multi-core cables for two or more signal cables. (Fig.2)
 - 8. Wiring
 - Bus systems must be used as a basic principle for multiple systems.(Fig.3)

Only a maximum of 16 branches can be used. (Fig.3)

The length of the cable between branches must be 2 m or more. (Fig.3)

If there are more than 17 branches, reduce the number of branch locations. (Fig.4)

(Putting 2 refrigerant systems to 1 wiring system, etc.)

Not include in branch within 1 m. (Fig.5)

Branches can only contain a maximum of 3 cables. 4 or more cables are prohibited. (Fig.6)

A branch after the branching of a wire is prohibited. (Fig.7)

Looped cables are prohibited. (Fig.8)

Consecutive suspension systems must be used as a basic principle for single systems. (Fig.9)

• Terminal resistance

To be set at one location when one outdoor unit is in use, and at two locations when multiple units are in use.

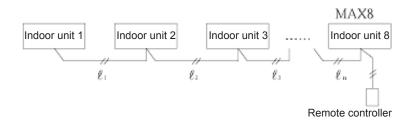
3) Remote control wiring

- Wiring
 - Between the remote controller and the indoor unit: Non-polar biaxial wires
 - Between indoor units: Non-polar biaxial wires
- Wire types

| Eco electrical wire code | Previous code | Name (previous name) | Applicable standard |
|--------------------------|---------------|--|-----------------------|
| EM-ECTF | VCTF | Heat-resistant polyethylene insulated heat-resistant polyethylene sheath cabtire round cord (Vinyl cabtire round cord) | JIS C 3306 |
| ECO120 | VCT | Heat-resistant polyethylene insulated heat-resistant polyethylene sheath cabtire round cable (Vinyl insulated vinyl cabtire cable) | JCS4501 JIS C 3312 |
| EM-MEE-S | MVVS | Heat-resistant polyethylene cord for use with covered microphones (Vinyl cord for use with covered microphones) | JCS4271 |

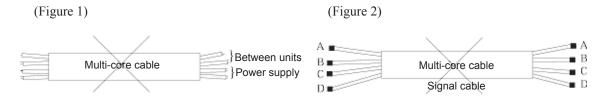
Note: Either block out the light or use UV-resistant cables if wiring is affected by ultraviolet rays (sunlight, lighting, etc.)

- Cable thickness: 0.5mm² 2mm²
- Insulated length
 - Maximum 500 m for the entire cable length (400 m when wireless remote controllers and simple remote controllers equipped with backlights are used within the group.)
 - Maximum 200 m for the entire cable length between indoor units. $(L_1 + L_2 + L_3 + L_n = Max 200 \text{ m})$



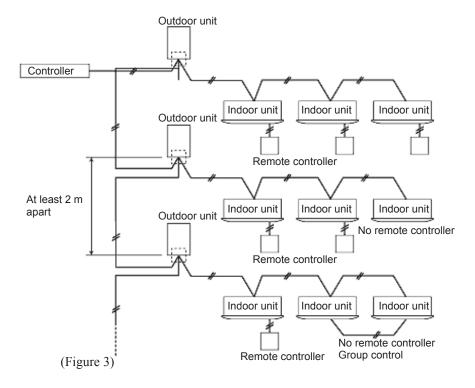
Precautions

- 1. Do not lay signal cables next to power line in order to prevent miss-operations.
- 2. Maintain a distance of 50 mm or more between the power lines of other air-conditioning units manufactured by Panasonic.
- 3. Maintain a distance of 300 mm or more between other power lines.
- 4. In the event of the cables needing to be laid within the above-mentioned distances, make sure one of them is enclosed in a steel power-line conduit.
- 5. When shielded cables are in use, make sure one side is grounded.
- 6. Do not use the same cable for signal cables and power cables. (Fig.1)
- 7. Do not use multi-core cables for two or more signal cables. (Fig.2)
- 8. If high-frequency equipment exists nearby, make sure the units are installed at least 3 m away from them.
 - Enclose the remote controller in a steel box and the remote controller wires in a steel conduit or steel conduit pipe.
- 9. Remote controller wires can be connected to a maximum of two items of control equipment to which connections are possible. However only one can be used per group for simple remote controllers equipped with backlights. They cannot be used in combination.
- 10. It is prohibited for the refrigerant system to be shared between units and for certain indoor units to be group controlled. Failure to observe this may result in misaligned modes and certain indoor units not operating.

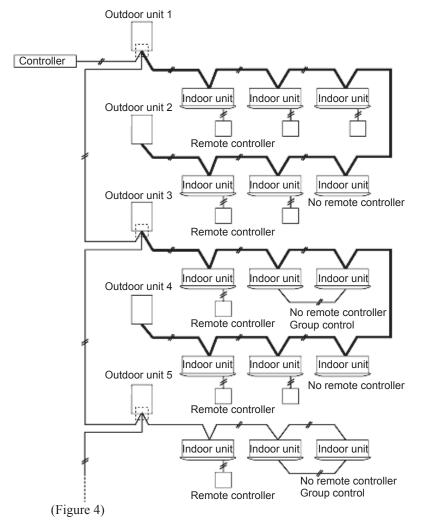


2 Control wire

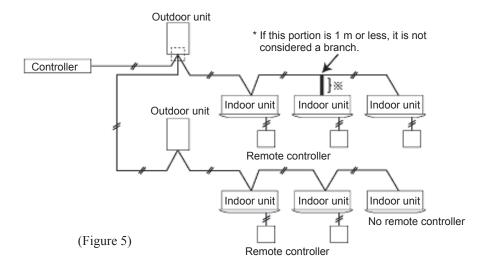
- Indoor/outdoor control wire connection example
 - 1) Bus system (can be branched to max 16 location). Outdoor link is basic. (Figure 3)



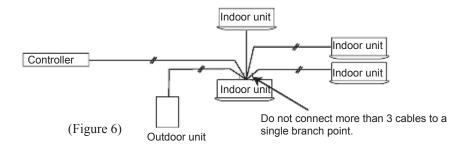
2) In 1), if there are more than 17 branches, reduce the number of branch locations. (Figure 4) <Example>Putting 2 refrigerant systems to 1 wiring system



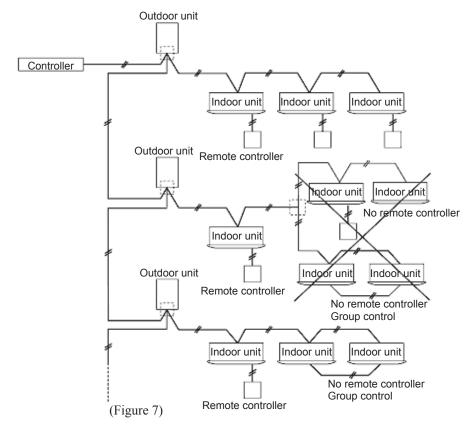
3) Wiring without branching (Figure 5) Column: Part of indoor wiring branches.



4) Star system is prohibited. (Figure 6)

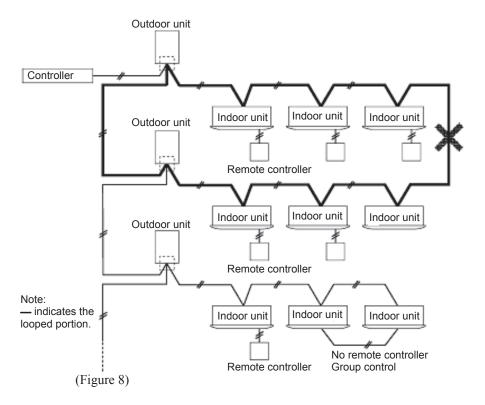


5) Branches after branching (branching of location that cannot be branched in a single stroke) are prohibited. (Figure 7)

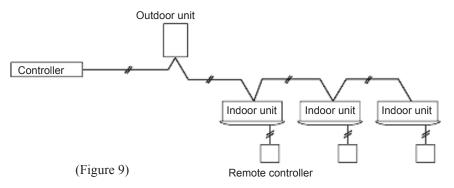


6) Loop wiring is prohibited. (Figure 8)

Example: As shown in the figure, do not have wiring where part of it is looped or the entire wiring is looped.



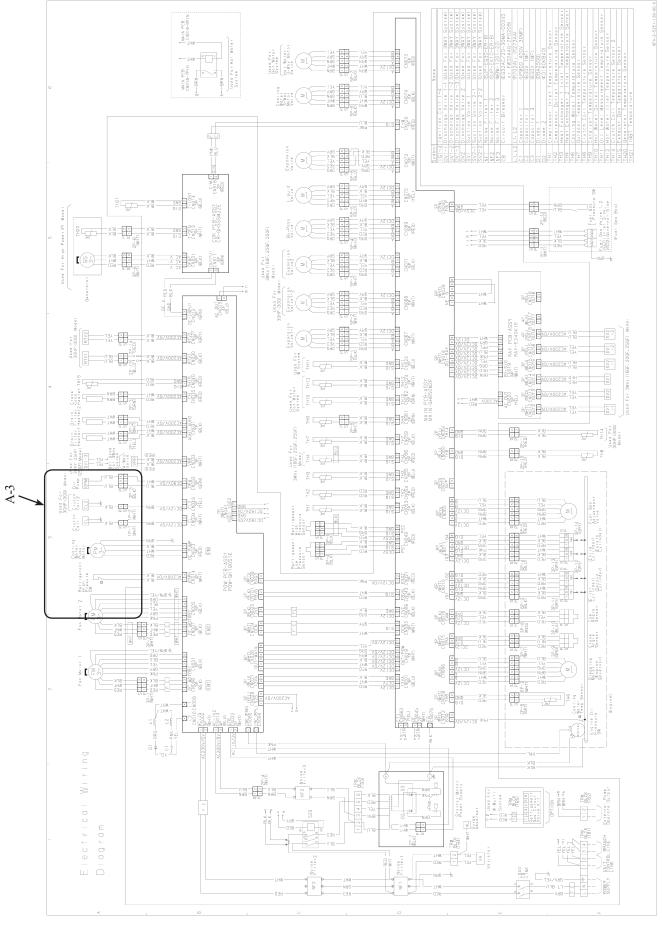
7) Daisy chain system (Figure 9)



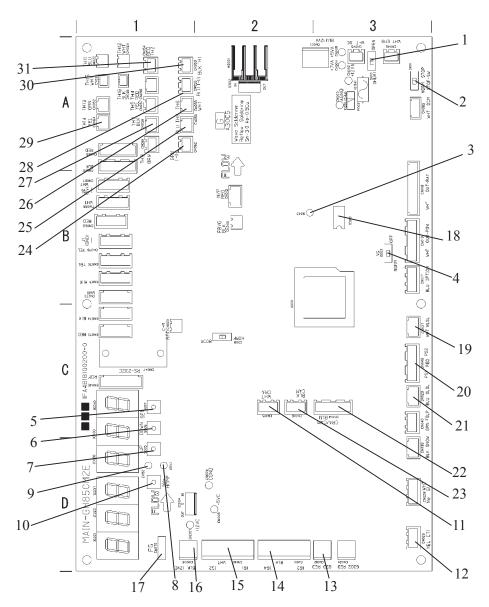
6. Outdoor Unit Electrical Wiring Diagram

<Reading the board and wiring diagram>

Example: When referring to "Electrical wiring diagram A-3", look at the area around the frame in the following diagram.

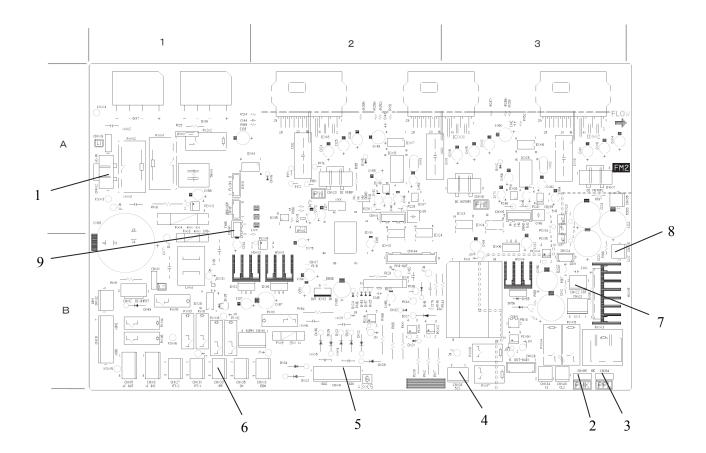


(1) Outdoor main board



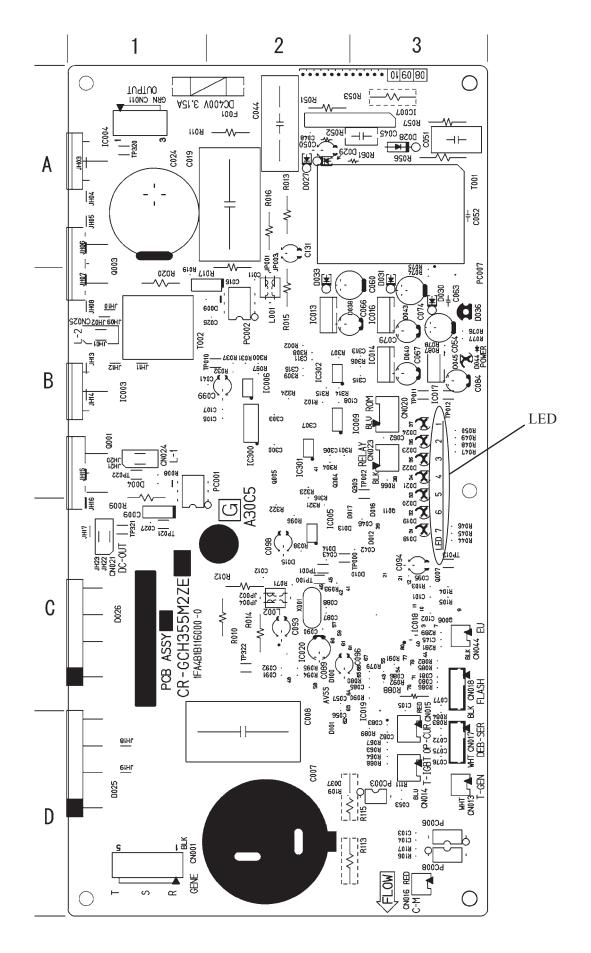
| No. | Name | Position in the diagram | No. | Name | Position in the diagram |
|-----|--|-------------------------|-----|--|-------------------------|
| 1 | Terminal resistor ON/OFF switch (S010) | A-3 | 17 | CN075 | D-1 |
| 2 | 2 STOP SW (S001) | | 18 | EEPROM | B-3 |
| 3 | Indoor/outdoor communications monitor (D043) | | 19 | CN037(WHITE) | C-3 |
| 4 | Gas solenoid valve forced off switch (S002) | B-3 | 20 | CN049(RED) Compressor outlet/inlet pressure sensors. PS1: Inlet, PS2: outlet | C-3 |
| 5 | SET key (S007) | C-1 | 21 | CN029(BLUE) | C-3 |
| 6 | DOWN key (S006) | C-1 | 22 | CN014(BLUE) | C-3 |
| 7 | UP key (S005) | D-1 | 23 | CN016(BLACK) | C-2 |
| 8 | LEVEL LED (D053) | D-1 | 24 | CN062(GREEN) Hot water outlet temperatur | A-1 |
| 9 | TEST/WARNING LED (D052) | D-1 | 25 | CN060(BLUE) Clutch coil temperature | A-1 |
| 10 | HOME key (S004) | D-1 | 26 | CN058(WHITE) Coolant temperature | A-1 |
| 11 | CN015(WHITE) | C-2 | 27 | CN059(BLACK) Outdoor air temperature | A-1 |
| 12 | CN063(YELLOW) | D-3 | 28 | CN055(BLUE) Heat exchanger inlet temperature | A-1 |
| 13 | CN012(RED) | D-3 | 29 | CN064(YELLOW) Clutch 2 coil temperature | A-1 |
| 14 | CN011(BLACK) | D-2 | 30 | CN053(BLACK) Compressor inlet temperature | A-1 |
| 15 | CN010(WHITE) | D-2 | 31 | CN054(RED) Compressor outlet temperature | A-1 |
| 16 | CN006(BLACK) | D-1 | | | |

(2) Outdoor power board

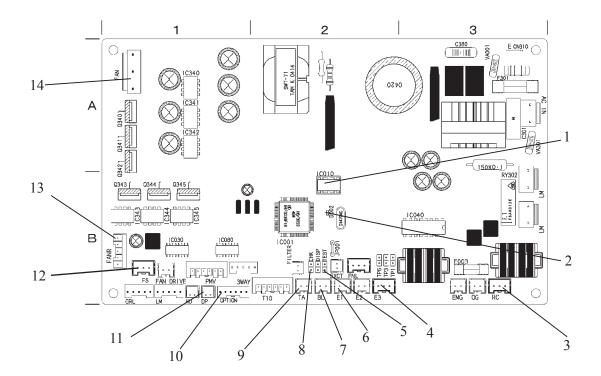


| No. | Name | Position in the diagram |
|-----|---------------------------|-------------------------|
| 1 | CN002 (yellow) | A-1 |
| 2 | CN085 (pink) | B-3 |
| 3 | CN084 (purple) | B-3 |
| 4 | CN028 (yellow) | B-2 |
| 5 | CN041 (white) | B-2 |
| 6 | CN033 (white) VRR | B-1 |
| 7 | CN022 (white) | B-3 |
| 8 | CN025 (black) | B-3 |
| 9 | CN040 (red) Exhaust temp. | B-1 |

(3) Converter board

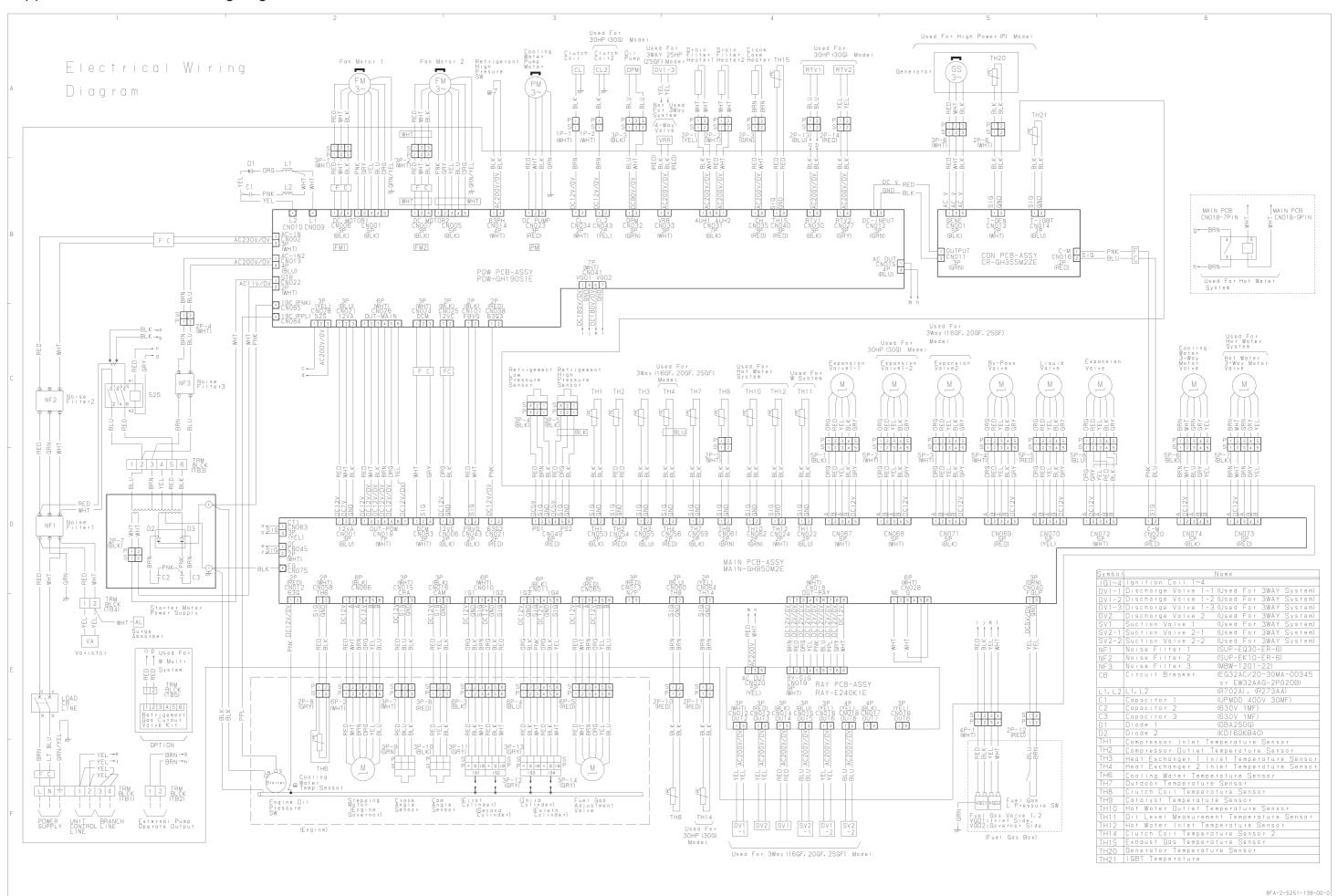


(4) Indoor control board for DC motor models



| No. | Name | Position in the diagram |
|-----|----------------------------------|-------------------------|
| 1 | EEPROM | B-2 |
| 2 | LED | B-2 |
| 3 | RC | B-3 |
| 4 | Heat exchanger outlet E3 (brown) | B-2 |
| 5 | TEST pin (CN2) | B-2 |
| 6 | Heat exchanger inlet E1 (red) | B-2 |
| 7 | Discharge (green) (BL) | B-2 |
| 8 | CHK pin (CN5) | B-2 |
| 9 | Room temp (intake) TA (yellow) | B-2 |
| 10 | OPTION | B-1 |
| 11 | CN078 DP (red) | B-1 |
| 12 | CN034 FS (red) | B-1 |
| 13 | CN334 (red) | B-1 |
| 14 | CN333 (red) | A-1 |

(5) Outdoor Unit Electrical Wiring Diagram



Panasonic[®]